PHYTOTOXICOLOGY SURVEYS IN THE VICINITY OF THE VICTORIA HOSPITAL ENERGY FROM WASTE (EFW) POWER PLANT, LONDON, ONTARIO 1984-1990

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1.0 BACKGROUND AND INTRODUCTION

The Victoria Hospital Corporation and the City of London constructed an Energy-From-Waste incinerator (EFW) facility that went into operation in London, Ontario in August, 1987. The facility was designed to replace an existing gas-fired electrical generator that was located on Victoria Hospital property. Residential garbage and sewage sludge were to be the primary fuels of the new facility. Operation of the EFW would therefore reduce landfill pressures at the W12-A site in the Township of Westminster, and reduce or eliminate requirements for incineration of processed sewage sludge at the obsolete Greenway Sewage Treatment Plant in London. When the facility was constructed, it contained three incinerators designed for the incineration of residential garbage only. One incinerator has since been temporarily closed while the remaining two operate at varying capacities.

The EFW was constructed on the south side of Commissioners Road almost directly across from the main hospital. These lands to the south of Commissioners Road are part the Westminster campus and constitute a 100 ha parcel known as the "South Campus". With the exception of the EFW, a psychiatric hospital, and the Parkwood chronic care hospital, the South Campus is relatively undeveloped. The campus also contains Saunders Pond, which is part of a conservation area known as Westminster Ponds/Pond Mills Conservation Area (WPPMCA). The ownership of all lands within the Westminster campus was transferred from the Ontario Government to the Victoria Hospital Corporation in 1981 (Eisen et al., 1983a).

Residential communities surround the Westminster campus. These communities include Glen Cairn North and South, Pond Mills to the east, Westminster Park to the southeast, Chesla Green to the northeast, Lockwood Park to the west and London South community to the north west. Park land (consisting of wooded areas and open fields) and commercial strips provide a buffer of 0.5 to 2 km between the EFW facility and the residential areas.

The proposal to build an EFW facility in proximity to residential areas and a conservation area was quite controversial and was reviewed by the Consolidated Joint Board (comprising the Environmental Assessment Board and the Ontario Municipal Board) under the Consolidated Hearings Act. Following public hearings, the *Reasons for Decision* of the Board were published and contained the various terms and conditions of approval to proceed with the development of the project (Eisen et al., 1983a; Eisen et al., 1983b). Included in these terms and conditions were a number of required undertakings of the Ministry of the Environment. These undertakings included both pre- and post-operational surveys of ambient air quality in the vicinity of the EFW and of vegetation and soil in the WPPMCA.

The results of pre-operational air monitoring are summarized in two published reports that document the results of studies conducted in the summer of 1984 (MOE, 1985) and the winter of 1986 (MOE, 1988). Levels of dustfall, total suspended particulate, sulphur dioxide, nitrogen dioxide, mercury and other metals in ambient air around the Victoria Hospital were well within provincial air quality guidelines. Similarly, a large number of hydrocarbons and chlorinated hydrocarbons were also found to be well within the guidelines. Air quality studies in the vicinity of the EFW, after the plant began operating in August 1987, showed no significant change in contaminant levels even though the plant was operating at between 80 and 100 percent capacity (MOE, 1989a; MOE, 1989b).

Pre- and post-operational studies of the terrestrial environment around the EFW were also required by the Consolidated Joint Board. These studies were conducted by the Phytotoxicology Section of the Air Resources Branch. The Section has been involved in soil and vegetation studies in the vicinity of the EFW since 1982 (i.e., 5 years prior to the commencement of operations).

A preliminary vegetation survey was conducted by members of the Phytotoxicology Section in 1982. This data has not been published and was designed to provide some background information on vegetation in the area. Formal pre-operational studies on soil and vegetation were initiated in the vicinity of Victoria Hospital in 1984. A summary of these initial activities is included in a report (MOE, 1986). These studies included:

Transect reconnaissance of vegetation in the WPPMCA.

Assessment of diseases, insect pests, and injuries observed on trees and shrubs in the WPPMCA.

Selection of permanent observation sites and identification of rare and uncommon species in the bog ecosystem of Spettigues Pond, WPPMCA.

Selection and vegetation analysis of one (1) permanent monitoring plot within the Maple-Beech-Elm forest near Spettigue's Pond for the purposes of long term monitoring of potential impacts of the EFW.

Establishment of a network of 15 sites within the vicinity of the proposed EFW and collection of maple foliage and soils at each of the sites for chemical analysis.

Establishment of a network of 41 moss bag stations to passively monitor air quality in the vicinity of the proposed EFW and monthly summer collection of exposed moss bags for chemical analysis.

The study did not find any signs of ozone or sulphur dioxide damage on sensitive indicator species within the WPPMCA nor did it find unusual insect or disease problems. However, the existence of a number of rare and uncommon species (especially orchids) within the conservation area had been previously documented by D. McLeod contained in a report on the biology of the area prepared for the Upper Thames River Conservation Authority (McLeod, 1981). Chemical analysis of soil and vegetation collected from the sampling network in 1984 indicated that for the most part samples contained normal background concentrations of the elements tested. Similarly, the chemical content of exposed moss bags reflected typical urban conditions, although isolated areas were identified where elevated concentrations of As, Cd, Ni, Na, S and Zn were present on one or two occasions (MOE, 1986).

This report outlines the results of soil, vegetation and moss bag surveys conducted both within the Westminster Ponds/Pond Mills Conservation Area and in the residential communities around the EFW from 1984 to 1990.

2.0 SITE STUDIES AND METHODOLOGY

Meterological Data

Seasonal wind data were obtained from Environment Canada and were collected at the London Airport during the period from 1955 to 1980.

Vegetation and Soil Surveys

The vegetation and soil survey originally established in 1984 was expanded in 1986 from 15 to 19 sites. Although many of the original sites were maintained, the new network of sites provided better geographic coverage (Figure 1). Changes were also made in the plot network in 1989. Such changes were necessary because the previously established sites were lost or destroyed through various forms of development including home building and and road alignment. Sites included in each of the annual surveys were as follows:

1984 - 42 to 56
1986 - 42, 43, 46, 48, 50, 52, and 54 to 66
1987 - same as 1986
1989 - 42, 43, 46, 47, 48, 50, 52, 54 to 59, 62, 63, 65, 67 and 68

Soil and vegetation collections were made in late-summer in 1984, 1986, 1987 and 1989. The 1987 sampling was conducted in September shortly after the incinerator began operation. Therefore, the information presented in this report covers both pre and post-operational condition.

The vegetation samples were oven dried, ground in a Wiley-mill and stored in glass bottles. Soil samples were air dried, pulverized to pass through a 60 mesh sieve and also stored in glass bottles. The prepared samples were then forwarded to the Ministry laboratory in Downsview for chemical analyses. The chemical analyses performed in each of the survey years are outlined below:

	Foliage				Soil			
	1984	1986	1987	1989	1984	1986	1987	1989
As	x	x	x	x	x	x	x	x
Cd	x	x	x	x	x	x	x	x
Cr	x	x	x	x	x	x	x	x
Cu	x	x	x	x	x	x	x	x
Fe	x	x	x	x	x	x	x	x
Mn	x	x	x	x	x	x	x	x
Na	x	x	x	x	x	x	x	x
Ni	x	x	x	x	x	x	x	x
Pb	x	x	x	x	x	x	x	x
Se	x	x	x	x	x	x	x	x
V	x	x	x	x	x	x	x	x
Zn	x	x	x	x	x	x	x	x
S	x	x	x		x	x	x	
Cl	x	x	x	x	x	x	x	
Ca	x	x	x		x	x	x	
F	x	x	x		x	x	x	
Mg	x	x	x		x	x	x	
Hg			x	x		x	x	x
Sb	x				x			
Co				x				x
Sr				x				x
Al				x				x

x - samples submitted for this element

The chemistry of vegetation and soils was compared to the MOE Upper Limits of Normal (ULN) contaminant guidelines to assess the degree of contamination around the facility. The ULN's represent the expected maximum concentrations in surface soil, foliage, grass, moss bags and snow (not included in this survey) in the absence of a point source of air pollution (MOE, 1989c)(see Appendix).

Moss Bag Surveys

Moss has been used regulairly by investigators to map zones of heavy metal contamination around point sources of air pollution. This is possible because of the absorption capacity of moss and its ability to sorb and retain airborne trace metals from wet and dry deposition. Small quantities of moss sewn into packets using nylon mesh are known as moss bags and have been employed by the Phytotoxicology Section for studying zones of atmospheric contamination around a range of industrial sources (Temple et al., 1981).

The network of 41 moss bag stations that was established in July, 1984 was reduced in size in 1986 to 20 of the original sites. Six (6) additional stations were added in 1986, one at each of the permanent plots (5 in the WPPMCA and 1 control). The distribution of these sites is presented in Figure 2. Collections were made for the months of May, September and October 1984; June, July, August, September and October 1986; and May and June 1990. Moss bags were collected after a 30-day exposure period. The sites sampled in each of the survey years were as follows:

1984	*- May to Oct*	*- 1 to 41 (samples missing for Site 31)*
1986	*- June*	*- 2,4,6,7,9,11,15,16,18,20,22,24,26,29,31,33,35,36,39,41*
	- July	*- same as above plus 57,58,59,61 (permanent plots)*
	- August	*- same as July plus 60 and 62 (permanent plots)*
	- September	*- same as July*
	- October	*- same as July*
1990	*- May*	*- same as July 1986*

Moss bags were processed in the Phytotoxicology Laboratory using standard procedures. The prepared samples were then forwarded to the Ministry laboratory in Downsview for chemical analyses. Analyses common to all years included *Cu, Fe, Mn, Na, Pb, Zn, Cd, Cr, Ni and V.* Analyses conducted only in 1984 and 1986 were *Ca, Cl, Sb, As, F, Mg, S, Mo and Se.* Elements tested in 1990 only were *Al, Hg, Co and Sr.* Chemical results were compared to the urban ULN guidelines (see ULN's for moss bags - Appendix).

Forest Plant Community Studies in the Westminster Ponds/Pond Mills Conservation Authority (WPPMCA)

Plant community studies within the WPPMCA were expanded in 1986 from the single permanent plot that was established in 1984 to include 6 permanent plots. Five (5) of these plots were established to represent the biological diversity in forested areas within the conservation area (Figure 3). In addition, a remote control site was established in Fanshawe, near Fanshawe Lake (approximately 14 km north northeast of the WPPMCA). These permanent plots were established between early-June and early-August, 1986. This expanded program was designed to provide the baseline information required to assess potential impacts of EFW emissions on the health and species composition within these important forest communities.

The plant communities were seggregated into three levels for evaluation. These included trees, shrubs and herbaceous plants. Details used for each are provided below.

Tree Plots:

The trees in permanent plots were examined in 5 strips at each of the 6 sites. Each strip was 50 meters long and 4 meters wide for a total area of 1000 m^2 at each site. Each strip was placed 6 meters apart with the strips running north-south unless the nature of the terrain dictated otherwise.

The centre line of each strip was established first with the position of all trees within the plot being measured relative to this line. Plants with a stem diameter greater than five (5) centimetres were considered trees and thus distinguished from shrubs. All trees were permanently tagged and numbered for future relocation. The following observations were made and recorded:

Species
Diameter at breast height (cm)
Crown condition (1 healthy - 10 dead) and insect injury rating (1-light 3-trace 5-moderate 7-severe)
Crown position/dominance (1 dominant - 3 shaded)
Crown cover length (m) (vertical interception along the mid-line)

Shrub Species:

Shrubs were defined as plants with woody stems between 0.5 and 5 cm in diameter and at least 50 cm tall. Thus some juvinile trees were included within this size range. Shrub populations were monitored within the strips that were established to examine tree cover. The plots were 1 meter by 4 meters and placed at right angles to the axis of the tree plots and running east and west. The southerly edge of each shrub plot was placed at the 5, 15, 25, 35 and 45 meter marks on the mid-line of the tree plots. The corner of each plot was marked with a steel assessment pin. At each plot, there were a total of 25 shrub plots (5 strips x 5 plots per strip) giving a total area of 100 m^2.

At each plot, the following were recorded for all living shrubs:

Species
Diameter at 15 cm (cm)
Number of stems
General condition and insect injury
Crown cover (vertical interception) along the midline of the shrub plot (east-west axis) (m)

Herbaceous Species:

All plants of herbaceous habit and trees or shrubs (seedlings) too small to fit into the limits of the classes noted above were treated as herbs. The herb plots were set out within the shrub plots and marked using assessment pins. The plots were 1 meter long and 20 centimetres wide. The east margins were 1 meter west of the midline of the tree plot. This arrangement provided 25 herb plots with a combined area of 5 m^2 per site.

At each plot the following information was recorded:

Species
Number of individuals (ie discrete clumps of grass, sedge, moss etc. were counted as separate plants)
Estimate of % surface cover by species

Soils Profiles:

Soil pits were excavated adjacent to each plot. Soil profiles were characterized according to the CANSIS system (Canadian Department of Agriculture, 1978). The profile analysis provided the following information for defined soil horizons:

Horizon Thickness
Colour
Texture
Structure
Horizon boundary information
Stoniness
Root abundance

Each horizon was sampled in duplicate for chemical analysis. Analyses were performed at the Ministry laboratory in Dorset, Ontario. These chemical parameters included:

pH ($CaCl_2$ and H_2O)
% Sand, Silt and Clay
% Organic Carbon
% Total Inorganic Carbon
Total N
Sulphate (H_2O)
Cation Exchange Capacity (CEC)
Ca, Mg, K and Al extract (NaCl)
Al extract ($CaCl_2$)
Fe and Al extract (Pyrophosphate)
Fe and Al extract (Dithionite)
Cu, Ni, Pb and Zn (Total)

Dioxin analyses were also conducted on near surface soils (0-5cm) collected from five of the permanent plots (Plots 2, 3, 6, 7 and 11).

3.0 RESULTS AND DISCUSSION

Wind Patterns and Predicted Pollution Deposition Zones

The following table summarizes seasonal wind data collected by Environment Canada at London Airport during the period from 1955 to 1980 (Environment Canada, 1982):

Table 1: Wind Direction Frequencies for the London Airport, London, Ontario (1955-1990) (Environment Canada, 1982)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Percentage Frequency													
N	4.0	5.5	5.0	5.4	5.7	5.1	5.3	5.7	6.0	4.8	3.5	4.1	5.0
NNE	1.3	2.3	2.4	2.0	2.1	2.0	2.1	2.3	2.6	1.8	1.7	1.9	2.0
NE	2.0	3.0	3.8	3.3	2.7	2.7	2.6	2.8	3.1	2.4	2.2	2.4	2.8
ENE	3.0	3.6	4.8	4.6	4.2	3.1	3.2	3.1	4.2	3.6	3.1	3.8	3.7
E	8.7	10.3	13.6	11.3	10.4	7.8	5.9	7.5	10.4	9.8	9.4	10.8	9.7
ESE	4.0	3.4	4.7	4.4	4.7	3.4	2.9	3.4	4.3	5.0	4.0	4.3	4.0
SE	2.7	3.2	3.4	3.9	4.3	3.6	3.1	3.1	4.5	4.3	3.6	2.9	3.6
SSE	2.4	2.5	2.8	3.6	4.1	4.3	3.7	3.2	4.2	4.7	3.6	2.5	3.5
S	4.4	4.5	4.4	5.7	7.5	9.5	8.0	7.1	7.6	6.7	5.4	4.5	6.3
SSW	6.5	5.9	5.2	5.9	7.0	9.1	8.7	8.0	6.9	6.7	7.1	6.1	6.9
SW	10.2	6.5	5.3	4.9	5.0	6.0	6.7	7.3	6.4	8.4	9.9	10.3	7.2
WSW	14.9	9.3	5.7	5.9	5.6	6.0	6.6	6.9	6.5	9.8	14.9	15.2	8.9
W	17.8	15.0	11.2	9.4	7.8	7.8	8.0	8.1	8.6	9.9	13.9	14.8	11.0
WNW	6.2	9.4	9.1	9.3	8.9	7.4	7.3	6.6	5.5	5.2	5.4	4.9	7.1
NW	4.7	6.6	8.5	9.8	8.6	8.2	8.5	7.2	5.7	5.5	4.3	3.6	6.8
NNW	4.2	5.1	6.2	6.7	6.1	6.0	6.4	6.7	5.6	5.0	4.3	4.1	5.5
CALM	3.0	3.9	3.9	3.9	5.3	8.0	11.0	11.0	7.9	6.4	3.7	3.8	6.0

These data emphasize the strong tendency toward south, southwesterly, west and northwesterly winds during the growing season. Winds from the east, possibly associated with weather disturbances, were also strongly represented.

The results of early modelling efforts to predict sulphur dioxide deposition associated with the EFW in the vicinity of Victoria Hospital are presented in Figure 4. The predicted deposition zones (maximum ground level concentrations) and the above wind data clearly emphasize that stations located to the west and east of the incinerator, at a distance of at least 500 m (i.e., in the stack shadow), will be the stations most likely impacted.

Soil and Vegetation Chemistry

The analytical results for vegetation and soils are presented in Tables 2 to 21. In summary, the data indicate that, for the majority of elements, the concentrations in plant tissue and soils around the incinerator were well within the range considered normal for an urban area (see ULN's-Appendix). In addition, there was no consistent trend toward increased concentration of elements in plots near and/or downwind of the facility subsequent to commencement of operations in August 1987.

The urban ULNs were exceeded for Cu, Mn and Na in foliage and Se and Zn in soils. There were no elements for which the urban ULNs were exceeded for both soil and vegetation. While there were individual stations that exceeded the urban ULN guidelines in the post-operational period and not in the pre-operational period (eg. Station 42 for Na), there were more examples of the contrary. For example, the concentration of copper in maple foliage collected from Station 54 exceeded the urban ULN in 1984 but was well below the guideline from 1986 to 1989.

The ULN guidelines for rural areas are generally lower than for urban areas. While these guidelines are not necessarily applicable in this case, they do provide a more conservative database with which to assess potential impacts from the incinerator. There were occasional cases where the rural foliage and/or soil ULNs were exceeded for certain elements (As, Cl, Fe for foliage; S and Sb for soils; Hg and Pb for foliage and soil). Although Hg and Pb occasionally exceeded the rural ULNs there were no individual elements for which concentrations in soil and vegetation were concurrently elevated at a given station in the years following start-up. In the case of Pb it appears that elevated concentrations in soils and foliage may have been the result of local phenomena not related to the incinerator. For example, Pb concentrations in foliage tended to be higher at Stations 50 to 56 than at other stations. These stations are located along a heavily travelled road (Commissioners Road) and have almost certainly been impacted by automobile Pb emissions. Concentrations of Pb in foliage and soils tended to decrease from 1984 to 1989 (possibly due to decreased use of leaded gasoline and improved emission standards) and no pre- vs. post-operational pattern of Pb concentration was observed.

Therefore, a number of observations suggest that exceedences of urban and rural guidelines were not related to the incinerator:

1) In general, concentrations of inorganic elements in soil and vegetation around the facility were considered in the normal range for an urban area (urban ULNs). For the majority of stations, concentrations of elements were also lower than the more conservative rural ULNs.

2) Concentrations of elements at stations near to the facility and/or those located downwind were not consistently elevated relative to those upwind and distant from the facility for samples collected after commencement of operations.

3) Similarly, stations known to be in the theoretical path of the plume did not have consistently higher concentrations of these elements in the post-operational period compared to the pre-operational period.

4) Typically, multi-element point sources having an impact on surrounding areas result in elevated concentrations of a number of the emitted elements in soil and vegetation. There were no survey stations in this study that had consistently elevated concentrations of a number of typically-emitted inorganic elements in the post-operational period.

5) There were also no individual elements for which concentrations in soil and vegetation were concurrently and consistently elevated at a given station in the years following start-up.

Moss Bag Chemistry

The results of moss bag chemistry are presented in Tables 22 to 41. The majority of moss bag collections were made prior to start-up of the incinerator, with two post-operational moss bag collections being made (May and June, 1990). Therefore, limited weight can be placed on comparisons between pre- and post-operational periods, especially given the fact that not all stations sampled in 1990 were sampled in the pre-operational years.

The only exceedences of the urban ULNs were for As, Cr, Ni and Zn at a limited number of stations. Although data were not available for As in the post-operational period, there was a general tendency towards decreased concentrations in exposed moss bags collected in 1986 compared to 1984 (Table 23). In contrast, Cr concentrations tended to be higher in 1986 compared to 1984 (Table 27). Three stations (Stations 7, 26 and 41) exceeded the urban ULN in 1986 for Cr, while there were no exceedences in 1984. No stations exceeded the urban ULN for Cr in the post-operational collection. Similarly, the only exceedence of the ULN for Zn was at Station 35 in 1986 prior to incinerator operation (Table 43). Ni was the only element for which concentrations in moss exceeded the urban ULN in the post-operational period (Table 35). Concentrations of Ni were also generally higher in the May 1990 collection compared to the pre-operational collection, with 5 stations exceeding the urban ULN for Ni in May (Stations 7, 9, 29, 35, and 41) and 8 stations exceeding the guideline in June (Stations 4, 7, 9, 20, 24, 26, 35 and 41). However, there were also some exceedences for Ni in the pre-operational collections (Stations 11 and 35) and although some of the stations exceeding the guideline in 1990 were in the areas predicted to receive higher inputs of incinerator gases, there were others that exceeded the ULN in low impact areas (eg. Station 41).

Therefore, in general, the moss bag data indicate that the concentration of elements were within the range considered normal for an urban area and were not elevated as a result of incinerator emissions.

Forest Plant Community Studies (WPPMCA)

The results of baseline observations of herbaceous, shrub and tree species in permanent plots are contained in Tables 42, 43 and 44, respectively. Vandalism of the plots and systematic removal of at least 95% of permanent plot markers precluded post-operational re-assessment of the permanent plot vegetation. The results of soil profile analysis and chemistry of various horizons within the soil profiles of permanent plots are summarized in Tables 45 and 46 and 47, respectively. Soil profiles were not re-sampled in the post-operational period because it was felt that measurable changes in the chemistry of the profile would be unlikely especially after so few years of EFW operation. Sub-surface soil changes would be especially unlikely given that surface soils collected from the survey plots did not show chemical impacts associated with the EFW. Therefore, pre- and post-startup comparisons were not possible and the soil and vegetation data are provided only as a summary of baseline conditions. The WPPMCA has suffered adverse impacts as a result of intense human use to perhaps a greater degree than any potential impact from the EFW.

4.0 SUMMARY

The data indicate that the concentrations of the majority of elements in soil and vegetation around the incinerator were well within the range considered normal for an urban area. In addition, there was no consistent trend toward increased concentration of elements in plots near and/or downwind of the facility subsequent to commencement of operations in August 1987.

Although moss bag studies were not conclusive, the data suggested that concentrations of inorganic elements in the incinerator plume were not sufficient to result in consistent downwind moss bag contamination. The data therefore coroborate the results of soil and vegetation data in finding no measurable impact from the EFW. Additional moss bag sampling will be required if this method is to be used to clearly establish measured post-operational impacts of the incinerator, should it remain in operation.

Vegetation and soil studies in the permanent plots were not conducted in the post-operational period due to alterations in the plots resulting from vandalism. However, a thorough documentation of baseline conditions in the plots is presented in this document.

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6.0 APPENDIX

MOE "Upper Limit of Normal" Guidelines:
Contaminant Guidelines and Derivation of Guidelines

Contaminant Guidelines Representing "Upper Limit of Normal" (ULN) Concentrations (ug/g, dry weight) of Parameters in Soil, Foliage and Moss Bags in Ontario (Urban and Rural).

Parameter	Soil (0-5cm)		Foliage -unwashed		Moss Bags++	
	Urban	Rural	Urban	Rural	Urban	Rural
Aluminum	a	a	500***	500	a	1700
Antimony	8	1**	0.5**	0.3**	2	a
Arsenic	20	10	2	0.5, 2*	2	1
Boron	15	10**	175	75	a	a
Cadmium	4	3, 4*	2*	1*	4	2
Calcium	b	b	a	3%	a	a
Chloride	a	a	b	0.15%	a	0.03%
Chromium	50	50	8	8	7	a
Cobalt	25***	25	2***	2	6	a
Copper	100	60	20	20	60	8
Fluoride	a	a	35	15	a	45
Iron	3.5%***	3.5%	1000	500	3000	1700
Lead	500	150	60	30	200	35
Magnesium	a	1%	0.7%	0.7%	a	a
Manganese	700	700, 1000*	100	b	a	a
Mercury	0.5	0.15	0.3	0.1	a	0.2
Molybdenum	3	2**	1.5	1.5	a	a
Nickel	60***	60	7	5, 30*	13	6
Nitrogen	a	a	b	b	a	a
Phosphorus	a	a	a	a	a	a
Potassium	a	d	a	a	a	a
Selenium	2	2	0.7	0.5	a	0.6
Silver	c	a	a	a	a	a
Sodium	a	a	350	50	a	b
Sulphur	a	0.1%	0.4%	0.4%	a	0.1%
Vanadium	70	70	5***	5	a	c
Zinc	500	500	250***	250	800	100

* The guidelines are approximately equal to the mean of the data plus three standard deviations.

* Where two values are shown, the first applies to Southern Ontario while the second is based on Northeast Region data. There are indications that some of the guidelines, at least for foliage, may be somewhat liberal for the Northwest Region. These guidelines are meant to be a supplement, rather than replace, specific control data.

** Provisional guidelines estimated from range of results, pending additional data.

*** Rural results higher than urban results - urban guideline based in rural results.

\+ Data for species considered to be accumulators (*Populus* spp., *Salix* spp., *Betula* spp.) excluded.

++ Moss bag guidelines based on 30 day exposure. No data from the NE Region.

+++ Snow guidelines are mg/l of meltwater, except conductivity which is umhos/cm. Based mainly on NW and Ne Region data.

a Sample size insufficient (<30) to establish guideline.

b Concentration highly variable - guideline not established.

c 50% or more of results less than detection limit - guideline not established.

d Discrepancy between Ontario data and literature values - guideline not established.

na Not applicable (no data).

Derivation and Significance of the MOE Phytotoxicology "Upper Limits of Normal" Contaminant Guidelines.

The MOE Upper Limits of Normal (ULN) contaminant guidelines represent the expected maximum concentration in surface soil, foliage (trees and shrubs), grass, moss bags, and snow from areas in Ontario not exposed to the influence of a point source of pollution. Urban ULN guidelines are based on samples collected from developed urban centres, whereas rural ULN guidelines were developed from non-urbanized areas. Samples were collected by Phytotoxicology staff using standard sampling procedures (ref: Ontario Ministry of the Environment 1983, Phytotoxicology Field Investigation Manual). Chemical analyses were conducted by the MOE Laboratory Services Branch.

The ULN is the arithmetic mean, plus three standard deviations of the mean, of the suitable background data. This represents 99% of the sample population. This means that for every 100 samples which have not been exposed to a point source of pollution, 99 will fall within the ULN.

The ULNs do not represent maximum desirable or allowable limits. Rather, they are an indication that concentrations that exceed the ULN may be the result of contamination from a pollution source. Concentrations that exceed the ULNs are not necessarily toxic to plants, animals, or people. Concentrations that are below the ULNs are not known to be toxic.

ULNs are not available for all elements. This is because some elements have a very large range in the natural environment and the ULN, calculated as the mean plus three standard deviations, would be unrealistically high. Also, for some elements, insufficient background data is available to confidently calculate ULNs. The MOE Phytotoxicology ULNs are constantly being reviewed as the background environmental data base is expanded. This will result in more ULNs being established and may amend existing ULNs.

TABLES

Table 2: Concentrations of arsenic in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage				Soil			
			1984	1986	1987	1989	1984	1986	1987	1989
42	1300 m S	Silver Maple	<0.03	0.44	1.10	0.5	3.81	3.1	3.1	3.0
43	1600 m S	Silver Maple	1.35	<0.03	<0.03	<0.2	5.18	3.9	4.3	3.4
44	2200 m SE	Sugar Maple	0.61				2.71			
45	2000 m SE	Sugar Maple	0.61				2.56			
46	1500 m SE	Silver Maple	0.61	<0.03	<0.03	<0.2	3.73	4.8	4.4	4.4
47	700 m E	Silver Maple	0.61			<0.2	4.53			4.6
48	1000 m SE	Sugar Maple	0.61	0.11	<0.03	<0.2	4.13	3.4		3.6
49	2500 m SE	Sugar Maple	<0.03				3.41			
50	1500 m E	Silver Maple	<0.03	<0.03	<0.03	<0.2	5.50	4.5	5.4	4.3
51	350 m E	Silver Maple	<0.03				3.80			
52	1100 m W	Silver Maple	<0.03	0.06	<0.03	<0.2	4.17	4.1	4.3	3.5
53	1500 m W	Silver Maple	<0.03				4.02			
54	3200 m W	Silver Maple	<0.03	0.06	<0.03	<0.2	3.65	3.2	3.1	2.8
55	4500 m W	Silver Maple	<0.03	<0.03	<0.03	<0.2	2.85	2.7	5.1	4.2
56	8100 m W	Silver Maple	<0.03	<0.03	<0.03	<0.2	4.24	3.2	3.8	3.8
57	850 m ESE	Silver Maple		0.04	<0.03	<0.2		3.2	3.7	3.1
58	800 m SSW	Silver Maple		<0.03	<0.03	<0.2		3.8	3.5	1.1
59	1400 m SSW	Silver Maple		<0.03	<0.03	<0.2		3.0	4.1	2.4
60	1100 m SE	Silver Maple		<0.03	<0.03			3.6	4.3	
61	2350 m ESE	Silver Maple		<0.03	<0.03			2.6	2.9	
62	15 km NNE	Silver Maple		<0.03	<0.03	<0.2		4.0	5.5	4.0
63	1350 m SE	Silver Maple		<0.03	<0.03	<0.2		3.5	3.8	2.9
64	2400 m SE	Silver Maple		0.06	<0.03			2.9	4.0	
65	800 m NNE	Silver Maple		<0.03	<0.03	<0.2		2.4	3.2	2.4
66	300 m NW	Silver Maple		<0.03	<0.03			4.6	5.7	
67	3100 m SE	Silver Maple				<0.2				1.3
68	2500 m ESE	Silver Maple				<0.2				4.0
ULN					2				20	

Table 3: Concentrations of calcium in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage 1984	Foliage 1986	Foliage 1987	Soil 1984	Soil 1986	Soil 1987
42	1300 m S	Silver Maple	8000	7000	7900	58000	77000	72000
43	1600 m S	Silver Maple	10000	9400	15000	2000	65000	65000
44	2200 m SE	Sugar Maple	22000			3900		
45	2000 m SE	Sugar Maple	15000			3400		
46	1500 m SE	Silver	15000	14000	17000	1300	9700	13000
47	700 m E	Silver	12000			5900		
48	1000 m SE	Sugar Maple	14000	18000		5000	27000	
49	2500 m SE	Sugar Maple	16000	18000		6800		
50	1500 m E	Silver Maple		15000	27000	30000	57000	49000
51	350 m E	Silver Maple		8400		54000		
52	1100 m W	Silver Maple		16000	18000	24000	28000	26000
53	1500 m W	Silver Maple		19000		43000		
54	3200 m W	Silver Maple		8100	16000	9900	27000	35000
55	4500 m W	Silver Maple		15000	16000	36000	42000	53000
56	8100 m W	Silver Maple		13000	30000	25000	35000	25000
57	850 m ESE	Silver Maple		8800	6400		3900	4100
58	800 m SSW	Silver Maple		11000	14000		4600	5400
59	1400 m SSW	Silver Maple		10000	20000		5900	8000
60	1100 m SE	Silver Maple		5600	11000		3700	3500
61	2350 m ESE	Silver Maple		14000	12000		3500	5400
62	15 km NNE	Silver Maple		15000	11000		1000	15000
63	1350 m SE	Silver Maple		14000	9900		8500	13000
64	2400 m SE	Silver Maple			14000		73000	38000
65	800 m NNE	Silver Maple			16000		38000	28000
66	300 m NW	Silver Maple			16000		41000	46000
67	3100 m SE	Silver Maple						
ULN .				not established			not established	

Table 4: Concentrations of cadmium in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage 1984	Foliage 1986	Foliage 1987	Foliage 1989	Soil 1984	Soil 1986	Soil 1987	Soil 1989
42	1300 m S	Silver Maple	<0.1	<0.1	<0.1	<0.1	0.9	0.4	<0.2	0.3
43	1600 m S	Silver Maple	<0.1	<0.1	<0.1	<0.1	1.9	0.4	0.3	0.2
44	2200 m SE	Sugar Maple	0.2				0.7			
45	2000 m SE	Sugar Maple	0.1				0.3			
46	1500 m SE	Silver	0.2	<0.1	<0.1	<0.1	0.6	0.6	0.4	0.4
47	700 m E	Silver	0.1			<0.2	0.8			0.4
48	1000 m SE	Sugar Maple	0.1	0.2		<0.2	0.8	0.3		0.4
49	2500 m SE	Sugar Maple	<0.1				0.6			
50	1500 m E	Silver Maple	<0.1	<0.1	<0.1	<0.1	0.6	0.6	0.3	0.5
51	350 m E	Silver Maple	0.1				0.5			
52	1100 m W	Silver Maple	0.1	0.1	<0.1	<0.1	0.5	0.5	0.3	0.8
53	1500 m W	Silver Maple	0.2				0.5			
54	3200 m W	Silver Maple	0.1	<0.1	<0.1	<0.1	0.6	0.5	0.4	0.4
55	4500 m W	Silver Maple	0.1	<0.1	<0.1	<0.1	0.5	0.5	0.4	0.4
56	8100 m W	Silver Maple	<0.1	<0.1	<0.1	<0.1	0.4	0.5	0.3	0.4
57	850 m ESE	Silver Maple		<0.1	<0.1	<0.1		0.4	<0.2	0.4
58	800 m SSW	Silver Maple		<0.1	<0.1	<0.1		0.3	<0.2	<0.1
59	1400 m SSW	Silver Maple		<0.1	<0.1	<0.1		0.3	<0.2	0.5
60	1100 m SE	Silver Maple		<0.1	<0.1			0.4	<0.2	
61	2350 m ESE	Silver Maple		<0.1	<0.1			<0.2	<0.2	
62	15 km NNE	Silver Maple		<0.1	<0.1	<0.2		0.4	0.3	0.4
63	1350 m SE	Silver Maple		<0.1	<0.1	<0.1		0.3	0.2	0.5
64	2400 m SE	Silver Maple		<0.1	<0.1			0.6	0.3	
65	800 m NNE	Silver Maple		<0.1	<0.1	<0.1		0.4	0.4	0.6
66	300 m NW	Silver Maple		<0.1	<0.1			0.6	0.4	
67	3100 m SE	Silver Maple				<0.1				<0.2
68	2500 n ESE	Silver Maple				<0.1				1.2
ULN				2				4		

Table 5: Concentrations of chloride in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage 1984	Foliage 1986	Foliage 1987	Soil 1984	Soil 1986	Soil 1987
42	1300 m S	Silver Maple	0.04	0.2	0.50	< 0.01	< 5	< 21
43	1600 m S	Silver Maple	0.13	0.06	0.09	< 0.01	< 5	< 18
44	2200 m SE	Sugar Maple				< 0.01		
45	2000 m SE	Sugar Maple				0.02		
46	1500 m SE	Silver		0.02	0.18	< 0.01	41	< 18
47	700 m E	Silver				< 0.01		
48	1000 m SE	Sugar Maple		0.01		< 0.01	41	
49	2500 m SE	Sugar Maple				< 0.01		
50	1500 m E	Silver Maple	0.03	0.20	0.55	0.02	41	< 23
51	350 m E	Silver Maple	0.18			0.02		
52	1100 m W	Silver Maple	0.11	0.08	1.30	0.02	41	< 10
53	1500 m W	Silver Maple	0.20			0.02		
54	3200 m W	Silver Maple	0.61	0.21	1.00	0.04	41	120
55	4500 m W	Silver Maple	0.28	1.16	0.72	0.04	71	< 11
56	8100 m W	Silver Maple	0.28	0.14	0.63	< 0.01	41	< 15
57	850 m ESE	Silver Maple		0.07	0.02		41	< 10
58	800 m SSW	Silver Maple		0.07	0.09		41	< 10
59	1400 m SSW	Silver Maple		0.22	0.50		80	< 10
60	1100 m SE	Silver Maple		0.04	0.03		< 5	< 18
61	2350 m ESE	Silver Maple		0.33	0.09		< 5	
62	15 km NNE	Silver Maple		0.48	0.26		80	< 10
63	1350 m SE	Silver Maple		0.02	0.02		80	< 18
64	2400 m SE	Silver Maple		0.28	0.34		< 5	
65	800 m NNE	Silver Maple		0.34	0.41		80	< 12
66	300 m NW	Silver Maple		0.03	0.09		80	
67	3100 m SE	Silver Maple						< 14
68	2500 m ESE	Silver Maple						< 10
ULN				not established			not established	

Table 6: Concentrations of chromium in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage 1984	Foliage 1986	Foliage 1987	Foliage 1989	Soil 1984	Soil 1986	Soil 1987	Soil 1989
42	1300 m S	Silver Maple	<1	<1	<1.0	<0.5	24	26	20	22
43	1600 m S	Silver Maple	<1	<1	<1.0	<0.5	25	31	25	25
44	2200 m SE	Sugar Maple	<1				15			
45	2000 m SE	Sugar Maple	<1				12			
46	1500 m SE	Silver	<1	<1	1.2	<1.3	14	45	28	22
47	700 m E	Silver	<1			<1.2	16			30
48	1000 m SE	Sugar Maple	<1	<5		<0.8	17	29		21
49	2500 m SE	Sugar Maple	<1				13			
50	1500 m E	Silver Maple	1	<1	1.7	<0.9	27	35	27	31
51	350 m E	Silver Maple	2				23			
52	1100 m W	Silver Maple	2	<1	1.4	<0.8	22	31	22	25
53	1500 m W	Silver Maple	<1				22			
54	3200 m W	Silver Maple	1	<1	2.4	<1.1	17	26	22	18
55	4500 m W	Silver Maple	1	1	1.5	<1.0	18	30	21	20
56	8100 m W	Silver Maple	1	1	1.6	<1.0	17	29	20	21
57	850 m ESE	Silver Maple		1	1.3	<0.9		27	20	20
58	800 m SSW	Silver Maple		<1	1.5	<0.9		23	16	10
59	1400 m SSW	Silver Maple		<1	1.1	<0.7		30	22	26
60	1100 m SE	Silver Maple		1	<1.0			29	21	
61	2350 m ESE	Silver Maple		<1	1.2			24	18	
62	15 km NNE	Silver Maple		1	1.2	<1.0		28	25	25
63	1350 m SE	Silver Maple		<1	<1.0	<0.6		31	26	28
64	2400 m SE	Silver Maple		<1	1.3			29	22	
65	800 m NNE	Silver Maple		1	<1.0	<0.5		20	14	24
66	300 m NW	Silver Maple		<1	1.3	0.6		30	21	
67	3100 m SE	Silver Maple				<0.6				12
68	2500 m ESE	Silver Maple				<1.0				23
ULN				8					50	

Table 7: Concentrations of copper in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage 1984	Foliage 1986	Foliage 1987	Foliage 1989	Soil 1984	Soil 1986	Soil 1987	Soil 1989
42	1300 m S	Silver Maple	8	3	1.1	1.2	18	16	16	24
43	1600 m S	Silver Maple	10	8	4.4	3.7	36	27	23	32
44	2200 m SE	Sugar Maple	4				7			
45	2000 m SE	Sugar Maple	7				6			
46	1500 m SE	Silver	5	6	3.4	8.8	9	30	19	23
47	700 m E	Silver	4			4.7	13			38
48	1000 m SE	Sugar Maple	4	3		3.0	11	21		28
49	2500 m SE	Sugar Maple	4				8			
50	1500 m E	Silver Maple	6	6	4.0	5.9	26	25	23	50
51	350 m E	Silver Maple	14				19			
52	1100 m W	Silver Maple	6	5	4.2	3.8	13	17	14	26
53	1500 m W	Silver Maple	8				23			
54	3200 m W	Silver Maple	25	15	11.0	14.0	14	20	15	14
55	4500 m W	Silver Maple	9	5	2.5	3.6	19	23	17	19
56	8100 m W	Silver Maple	5	4	2.8	3.1	11	15	12	17
57	850 m ESE	Silver Maple		4	5.4	5.3		13	9	25
58	800 m SSW	Silver Maple		9	6.8	9.3		11	9	10
59	1400 m SSW	Silver Maple		7	2.8	4.0		17	15	27
60	1100 m SE	Silver Maple		6	5.4			14	10	
61	2350 m ESE	Silver Maple		5	3.0			11	11	
62	15 km NNE	Silver Maple		9	7.8	7.9		30	16	26
63	1350 m SE	Silver Maple		6	3.7	5.3		17	16	30
64	2400 m SE	Silver Maple		5	3.6	5.3		22	17	27
65	800 m NNE	Silver Maple		6	4.5	8.9		15	15	20
66	300 m NW	Silver Maple		6	6.3			16	17	97
67	3100 m SE	Silver Maple				8.9				
68						3.1				
ULN					20				100	

Table 8: Concentrations of fluoride in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage 1984	Foliage 1986	Foliage 1987	Soil 1984	Soil 1986	Soil 1987
42	1300 m S	Silver Maple	3	<1	<3	67	79	76
43	1600 m S	Silver Maple	4	<1	<2	54	82	78
44	2200 m SE	Sugar Maple	3			21		
45	2000 m SE	Sugar Maple	2			13		
46	1500 m SE	Silver	2	<1	<4	24	46	56
47	700 m E	Silver	2			28		
48	1000 m SE	Sugar Maple	2	<1		35	62	
49	2500 m SE	Sugar Maple	2			24		
50	1500 m E	Silver Maple	10	3	8	40	78	78
51	350 m E	Silver Maple	10			55		
52	1100 m W	Silver Maple	8	3	6	30	40	43
53	1500 m W	Silver Maple	5			53		
54	3200 m W	Silver Maple	6	3	<4	40	42	55
55	4500 m W	Silver Maple	6	4	7	42	50	69
56	8100 m W	Silver Maple	5	3	10	41	56	58
57	850 m ESE	Silver Maple		<1	<1		25	30
58	800 m SSW	Silver Maple		3	4		19	22
59	1400 m SSW	Silver Maple		<2	3		33	32
60	1100 m SE	Silver Maple		<2	<2		23	26
61	2350 m ESE	Silver Maple		<2	4		23	35
62	15 km NNE	Silver Maple		3	7		86	38
63	1350 m SE	Silver Maple		<2	4		46	49
64	2400 m SE	Silver Maple		4	9		72	63
65	800 m NNE	Silver Maple		4	5		61	50
66	300 m NW	Silver Maple		4	9		52	70
ULN				35			not established	

Table 9: Concentrations of iron in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage 1984	Foliage 1986	Foliage 1987	Foliage 1989	Soil 1984	Soil 1986	Soil 1987	Soil 1989
42	1300 m S	Silver Maple	130	290	620	550	20000	13000	13000	12000
43	1600 m S	Silver Maple	120	88	84	58	22000	17000	16000	15000
44	2200 m SE	Sugar Maple	84				15000			
45	2000 m SE	Sugar Maple	93				14000			
46	1500 m SE	Silver	85	60	110	170	14000	29000	22000	15000
47	700 m E	Silver	89			74	16000			23000
48	1000 m SE	Sugar Maple	120	76		82	18000	17000		17000
49	2500 m SE	Sugar Maple	160				14000			
50	1500 m E	Silver Maple	270	94	330	180	25000	21000	20000	21000
51	350 m E	Silver Maple	750				15000			
52	1100 m W	Silver Maple	300	87	220	140	14000	15000	14000	14000
53	1500 m W	Silver Maple	200				17000			
54	3200 m W	Silver Maple	230	140	180	110	19000	14000	11000	12000
55	4500 m W	Silver Maple	170	170	300	240	14000	15000	13000	12000
56	8100 m W	Silver Maple	140	87	200	110	16000	18000	16000	16000
57	850 m ESE	Silver Maple		47	150	100		16000	15000	13000
58	800 m SSW	Silver Maple		120	240	110		14000	13000	8000
59	1400 m SSW	Silver Maple		70	120	63		17000	17000	13000
60	1100 m SE	Silver Maple		87	76			18000	17000	
61	2350 m ESE	Silver Maple		70	250			16000	12000	
62	15 km NNE	Silver Maple		110	210	110		15000	18000	18000
63	1350 m SE	Silver Maple		84	130	95		18000	19000	18000
64	2400 m SE	Silver Maple		120	220			14000	17000	
65	800 m NNE	Silver Maple		110	140	95		10000	11000	12000
66	300 m NW	Silver Maple		93	240			15000	16000	
67	3100 m SE	Silver Maple				120				6300
68	2500 m ESE	Silver Maple				110				17000
ULN				1000				35000		

Table 10: Concentrations of mercury in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage 1987	Foliage 1989	Soil 1986	Soil 1987	Soil 1989
42	1300 m S	Silver Maple	0.04	0.06	0.02	0.04	< 0.05
43	1600 m S	Silver Maple	0.05	0.10	0.13	0.08	< 0.05
44	2200 m SE	Sugar Maple					
45	2000 m SE	Sugar Maple					
46	1500 m SE	Silver	0.07	0.10	0.08	0.08	0.06
47	700 m E	Silver		0.11			0.07
48	1000 m SE	Sugar Maple		0.13	0.04		0.08
49	2500 m SE	Sugar Maple					
50	1500 m E	Silver Maple	0.07	0.10	0.04	0.07	0.06
51	350 m E	Silver Maple					
52	1100 m W	Silver Maple	0.08	0.12	0.04	0.07	< 0.03
53	1500 m W	Silver Maple					
54	3200 m W	Silver Maple	0.05	0.08	0.04	0.10	< 0.02
55	4500 m W	Silver Maple	0.08	0.10	0.04	0.05	< 0.05
56	8100 m W	Silver Maple	0.04	0.08	0.04	0.07	< 0.04
57	850 m ESE	Silver Maple	0.08	0.22	0.06	0.09	0.09
58	800 m SSW	Silver Maple	0.07	0.08	0.06	0.09	< 0.03
59	1400 m SSW	Silver Maple	0.05	0.06	0.05	0.12	0.07
60	1100 m SE	Silver Maple	0.06		0.04	0.09	
61	2350 m ESE	Silver Maple	0.10		0.04	0.07	
62	15 km NNE	Silver Maple	0.05	< 0.05	0.08	0.09	< 0.05
63	1350 m SE	Silver Maple	0.10	0.10	0.04	0.08	0.06
64	2400 m SE	Silver Maple	0.08		0.04	0.05	
65	800 m NNE	Silver Maple	0.09	0.19	0.04	0.05	0.07
66	300 m NW	Silver Maple	0.07		0.05	0.05	
67	3100 m SE	Silver Maple		0.07			0.06
68	2500 m ESE	Silver Maple		0.08			0.19
ULN			0.3			0.5	

Table 11: Concentrations of magnesium in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage 1984	Foliage 1986	Foliage 1987	Soil 1984	Soil 1986	Soil 1987
42	1300 m S	Silver Maple	1700	1200	1200	11000	15000	15000
43	1600 m S	Silver Maple	1600	2200	2200	8500	13000	13000
44	2200 m SE	Sugar Maple	2000			2900		
45	2000 m SE	Sugar Maple	2100			1800		
46	1500 m SE	Silver	1400	1700	3500	2800	7900	6300
47	700 m E	Silver	1400			3700		
48	1000 m SE	Sugar Maple	1600	1900		4000	8300	
49	2500 m SE	Sugar Maple	1800			3800		
50	1500 m E	Silver Maple		2400	3000	10000	12000	11000
51	350 m E	Silver Maple				15000		
52	1100 m W	Silver Maple		2300	3200	6500	8000	7400
53	1500 m W	Silver Maple				11000		
54	3200 m W	Silver Maple		1800	3200	4400	7700	7100
55	4500 m W	Silver Maple		2200	2300	9100	10000	13000
56	8100 m W	Silver Maple		2500	3700	7300	11000	8100
57	850 m ESE	Silver Maple		1500	1800		2900	3100
58	800 m SSW	Silver Maple		1600	2500		2500	2600
59	1400 m SSW	Silver Maple		1200	1800		4000	4400
60	1100 m SE	Silver Maple		1800	1800		3400	3500
61	2350 m ESE	Silver Maple		1500	1900		2400	3600
62	15 km NNE	Silver Maple		2000	2700		3800	6000
63	1350 m SE	Silver Maple		1200	1500		4800	6100
64	2400 m SE	Silver Maple		2000	1800		15000	9600
65	800 m NNE	Silver Maple		2200	2200		8100	7000
66	300 m NW	Silver Maple		2400	3300		9700	13000
67	3100 m SE	Silver Maple						
68	2500 m ESE	Silver Maple						
ULN				7000		not established		

Table 12: Concentrations of manganese in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage				Soil			
			1984	1986	1987	1989	1984	1986	1987	1989
42	1300 m S	Silver Maple	49	63	59	94	390	440	410	440
43	1600 m S	Silver Maple	37	35	30	24	390	440	450	430
44	2200 m SE	Sugar Maple	**160**				190			
45	2000 m SE	Sugar Maple	92				110			
46	1500 m SE	Silver	**250**	18	60	31	290	630	560	420
47	700 m E	Silver	67			55	390			530
48	1000 m SE	Sugar Maple	54	**710**		**140**	280	420		380
49	2500 m SE	Sugar Maple	**140**				210			
50	1500 m E	Silver Maple	43	33	49	27	560	540	510	550
51	350 m E	Silver Maple	51				380			
52	1100 m W	Silver Maple	68	36	65	33	430	510	480	470
53	1500 m W	Silver Maple	**160**				360			
54	3200 m W	Silver Maple	15	58	**240**	**130**	490	340	510	450
55	4500 m W	Silver Maple	98	39	41	30	400	390	420	400
56	8100 m W	Silver Maple	71	45	64	43	450	520	500	550
57	850 m ESE	Silver Maple		64	**130**	**120**		600	560	320
58	800 m SSW	Silver Maple		100	**110**	78		200	210	260
59	1400 m SSW	Silver Maple		32	48	22		250	240	360
60	1100 m SE	Silver Maple		100	76			390	410	
61	2350 m ESE	Silver Maple		64	39			200	230	
62	15 km NNE	Silver Maple		91	49	37		150	690	680
63	1350 m SE	Silver Maple		28	47	40		460	490	490
64	2400 m SE	Silver Maple		31	48			350	420	
65	800 m NNE	Silver Maple		49	47	36		320	340	350
66	300 m NW	Silver Maple		27	56			510	400	
67	3100 m SE	Silver Maple				69				190
68	2500 m ESE	Silver Maple				28				250
ULN				100				700		

Table 13: Concentrations of sodium in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage				Soil			
			1984	1986	1987	1989	1984	1986	1987	1989
42	1300 m S	Silver Maple	18	100	470	380	140	190	180	210
43	1600 m S	Silver Maple	<10	<10	18	<8	270	170	160	140
44	2200 m SE	Sugar Maple	<10				72			
45	2000 m SE	Sugar Maple	<10				46			
46	1500 m SE	Silver	<10	15	<10	33	31	140	120	120
47	700 m E	Silver	<10			<8	63			110
48	1000 m SE	Sugar Maple	13	11		<5	88	130		90
49	2500 m SE	Sugar Maple	<10				50			
50	1500 m E	Silver Maple		17	93	50	240	240	170	210
51	350 m E	Silver Maple					150			
52	1100 m W	Silver Maple		22	33	38	130	150	130	240
53	1500 m W	Silver Maple					160			
54	3200 m W	Silver Maple		12	46	15	130	150	360	220
55	4500 m W	Silver Maple		34	140	150	150	180	180	210
56	8100 m W	Silver Maple		13	89	73	110	160	120	120
57	850 m ESE	Silver Maple		<10	<10	<8		75	65	68
58	800 m SSW	Silver Maple		<10	13	13		76	75	110
59	1400 m SSW	Silver Maple		10	18	<8		100	84	170
60	1100 m SE	Silver Maple		<10	<10			74	69	
61	2350 m ESE	Silver Maple		23	24			80	76	
62	15 km NNE	Silver Maple		<10	28	17		130	110	97
63	1350 m SE	Silver Maple		17	<10	<7		96	110	82
64	2400 m SE	Silver Maple		12	32	13		210	150	
65	800 m NNE	Silver Maple		12	33			130	110	130
66	300 m NW	Silver Maple		14	17	15		130	140	
67	3100 m SE	Silver Maple				180				120
68	2500 m ESE	Silver Maple								1700
ULN					350				not established	

Table 14: Concentrations of nickel in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage 1984	Foliage 1986	Foliage 1987	Foliage 1989	Soil 1984	Soil 1986	Soil 1987	Soil 1989
42	1300 m S	Silver Maple	<1	<1.0	1.7	<0.5	17	12	12.0	14.0
43	1600 m S	Silver Maple	<1	<1.0	<1.0	<0.5	20	17	16.0	15.0
44	2200 m SE	Sugar Maple	<1				9			
45	2000 m SE	Sugar Maple	<1				7			
46	1500 m SE	Silver	<1	<1.0	<1.0	<1.2	11	33	18.0	15.0
47	700 m E	Silver	<1			<0.5	14			22.0
48	1000 m SE	Sugar Maple	<1	<1.0		<0.5	13	15		15.0
49	2500 m SE	Sugar Maple	<1				9			
50	1500 m E	Silver Maple	1	<1.0	1.2	<0.6	18	20	18.0	21.0
51	350 m E	Silver Maple	3				13			
52	1100 m W	Silver Maple	1	<1.0	<1.0	<0.5	12	12	11.0	12.0
53	1500 m W	Silver Maple	<1				13			
54	3200 m W	Silver Maple	<1	<1.0	<1.0	<0.5	10	11	8.8	9.0
55	4500 m W	Silver Maple	<1	<1.0	<1.0	<0.6	9	11	11.0	10.0
56	8100 m W	Silver Maple	<1	<1.0	1.4	<0.5	8	10	8.2	11.0
57	850 m ESE	Silver Maple		<1.0	<1.0	<0.5		13	12.0	15.0
58	800 m SSW	Silver Maple		<1.0	1.0	<0.5		10	9.5	5.7
59	1400 m SSW	Silver Maple		<1.0	<1.0	<0.5		16	14.0	14.0
60	1100 m SE	Silver Maple		<1.0	<1.0			14	13.0	
61	2350 m ESE	Silver Maple		<1.0	<1.0			10	11.0	
62	15 km NNE	Silver Maple		<1.0	<1.0	<0.5		13	15.0	16.0
63	1350 m SE	Silver Maple		<1.0	<1.0	<0.5		16	15.0	16.0
64	2400 m SE	Silver Maple		<1.0	1.4	<0.7		13	14.0	
65	800 m NNE	Silver Maple		<1.0	2.4	<0.5		9	9.7	14.0
66	300 m NW	Silver Maple		<1.0	2.2			13	13.0	
67	3100 m SE	Silver Maple				<0.8				8.9
68	2500 m ESE	Silver Maple				<0.5				23.0
ULN					7					60

Table 15: Concentrations of lead in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage 1984	Foliage 1986	Foliage 1987	Foliage 1989	Soil 1984	Soil 1986	Soil 1987	Soil 1989
42	1300 m S	Silver Maple	2	3	2.1	< 1.2	16	22	20	21
43	1600 m S	Silver Maple	4	2	2.4	< 0.7	69	35	28	21
44	2200 m SE	Sugar Maple	2				19			
45	2000 m SE	Sugar Maple	3				25			
46	1500 m SE	Silver	2	< 1	2.7	4.5	21	31	27	37
47	700 m E	Silver	2			< 1.7	25			25
48	1000 m SE	Sugar Maple	4	< 1		< 1.0	21	31		25
49	2500 m SE	Sugar Maple	4				24			
50	1500 m E	Silver Maple	35	5	12.0	3.5	92	51	43	49
51	350 m E	Silver Maple	28				52			
52	1100 m W	Silver Maple	29	6	7.7	3.1	210	72	130	130
53	1500 m W	Silver Maple	16				84			
54	3200 m W	Silver Maple	18	13	6.7	< 1.8	36	150	84	49
55	4500 m W	Silver Maple	16	9	17.0	6.5	120	330	130	92
56	8100 m W	Silver Maple	12	3	4.9	< 1.6	30	68	47	51
57	850 m ESE	Silver Maple		< 1	1.7	< 1.7		27	22	28
58	800 m SSW	Silver Maple		2	3.1	< 2.2		39	31	16
59	1400 m SSW	Silver Maple		2	2.7	< 1.0		33	34	50
60	1100 m SE	Silver Maple		2	1.1			31	30	
61	2350 m ESE	Silver Maple		2	4.8			25	26	
62	15 km NNE	Silver Maple		< 1	2.3	< 1.3		57	20	21
63	1350 m SE	Silver Maple		< 1	3.0	< 1.3		20	17	16
64	2400 m SE	Silver Maple		2	5.7			85	32	
65	800 m NNE	Silver Maple		2	4.4	2.6		38	110	130
66	300 m NW	Silver Maple		6	8.4	< 1.2		32	29	
67	3100 m SE	Silver Maple				< 1.4				17
68	2500 m ESE	Silver Maple				< 1.5				83
ULN					60				500	

Table 16: Concentrations of sulphur in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage 1984	Foliage 1986	Foliage 1987	Soil 1984	Soil 1986	Soil 1987	Soil 1989
42	1300 m S	Silver Maple	0.14	0.08	0.10	0.05	0.08	0.032	
43	1600 m S	Silver Maple	0.12	0.11	0.12	0.20	0.05	0.031	21.00
44	2200 m SE	Sugar Maple	0.19			0.06			
45	2000 m SE	Sugar Maple	0.19			0.04			
46	1500 m SE	Silver	0.16	0.11	0.12	0.05	0.06	0.039	37.00
47	700 m E	Silver	0.15			0.09			25.00
48	1000 m SE	Sugar Maple	0.15	0.10		0.07	0.05		25.00
49	2500 m SE	Sugar Maple	0.24			0.06			
50	1500 m E	Silver Maple	0.21	0.18	0.25	0.06	0.04	0.032	49.00
51	350 m E	Silver Maple	0.13			0.05			
52	1100 m W	Silver Maple	0.26	0.20	0.22	0.05	0.04	0.033	130.00
53	1500 m W	Silver Maple	0.12			0.07			
54	3200 m W	Silver Maple	0.13	0.13	0.14	0.06	0.05	0.055	49.00
55	4500 m W	Silver Maple	0.14	0.21	0.18	0.05	0.04	0.039	92.00
56	8100 m W	Silver Maple	0.10	0.10	0.14	0.04	< 0.01	0.034	51.00
57	850 m ESE	Silver Maple		0.07	0.13		0.02	0.022	28.00
58	800 m SSW	Silver Maple		0.13	0.15		0.04	0.035	16.00
59	1400 m SSW	Silver Maple		0.10	0.13		0.04	0.048	50.00
60	1100 m SE	Silver Maple		0.10	0.07		0.02	0.021	
61	2350 m ESE	Silver Maple		0.05	0.15		0.03	0.019	
62	15 km NNE	Silver Maple		0.11	0.12		0.07	0.039	21.00
63	1350 m SE	Silver Maple		0.12	0.15		0.05	0.035	16.00
64	2400 m SE	Silver Maple		0.13	0.12		0.05	0.032	
65	800 m NNE	Silver Maple		0.16	0.17		0.03	0.039	130.00
66	300 m NW	Silver Maple		0.26	0.22		0.06	0.054	
67	3100 m SE	Silver Maple							17.00
68	2500 m ESE	Silver Maple							83.00
ULN				0.4		not established			

Table 17: Concentrations of antimony in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage 1984	Soil 1984
42	1300 m S	Silver Maple	0.03	0.22
43	1600 m S	Silver Maple	<0.03	0.35
44	2200 m SE	Sugar Maple	<0.03	0.28
45	2000 m SE	Sugar Maple	<0.03	0.20
46	1500 m SE	Silver	<0.03	0.28
47	700 m E	Silver	<0.03	0.47
48	1000 m SE	Sugar Maple	<0.03	0.47
49	2500 m SE	Sugar Maple	<0.03	0.35
50	1500 m E	Silver Maple	<0.03	0.33
51	350 m E	Silver Maple	<0.03	0.33
52	1100 m W	Silver Maple	<0.03	1.38
53	1500 m W	Silver Maple	<0.03	0.33
54	3200 m W	Silver Maple	<0.03	0.07
55	4500 m W	Silver Maple	<0.03	0.14
56	8100 m W	Silver Maple	<0.03	0.14
ULN			0.5	8

Table 18: Concentrations of selenium in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage 1984	Foliage 1986	Foliage 1987	Foliage 1989	Soil 1984	Soil 1986	Soil 1987	Soil 1989
42	1300 m S	Silver Maple	< 0.03	0.10	0.30	< 0.20	**4.67**	0.37	0.59	<0.26
43	1600 m S	Silver Maple	< 0.03	0.30	< 0.30	< 0.20	**5.93**	0.88	1.70	<0.26
44	2200 m SE	Sugar Maple	< 0.03				0.03			
45	2000 m SE	Sugar Maple	< 0.03				0.53			
46	1500 m SE	Silver	< 0.03	0.16	< 0.30	< 0.20	1.66	1.00	1.30	<0.53
47	700 m E	Silver	< 0.03			< 0.20	**2.50**			<0.38
48	1000 m SE	Sugar Maple	< 0.03	0.22		< 0.20	0.32	0.76		<0.37
49	2500 m SE	Sugar Maple	< 0.03				0.41			
50	1500 m E	Silver Maple	0.03	0.16	< 0.30	< 0.20	**2.49**	1.40	**2.10**	<0.32
51	350 m E	Silver Maple	0.03				0.36			
52	1100 m W	Silver Maple	0.03	0.10	< 0.30	< 0.20	0.27	0.67	0.69	<0.25
53	1500 m W	Silver Maple	< 0.03				0.36			
54	3200 m W	Silver Maple	< 0.03	0.10	< 0.30	< 0.20	0.27	0.34	0.98	<0.37
55	4500 m W	Silver Maple	< 0.03	< 0.03	< 0.30	< 0.20	0.19	0.39	1.00	<0.25
56	8100 m W	Silver Maple	< 0.03	< 0.03	< 0.30	< 0.20	0.10	0.33	<0.30	<0.32
57	850 m ESE	Silver Maple		< 0.03	< 0.30	< 0.20		0.64	0.77	<0.42
58	800 m SSW	Silver Maple		0.28	< 0.30	< 0.20		0.73	<0.30	<0.20
59	1400 m SSW	Silver Maple		0.04	< 0.30	< 0.20		0.70	0.55	<0.23
60	1100 m SE	Silver Maple		0.04	< 0.30			0.40	1.30	
61	2350 m ESE	Silver Maple		0.04	< 0.30			0.66	0.51	
62	15 km NNE	Silver Maple		0.10	< 0.30	< 0.20		1.20	**2.50**	<0.51
63	1350 m SE	Silver Maple		< 0.03	< 0.30	< 0.20		0.70	**2.10**	<0.43
64	2400 m SE	Silver Maple		< 0.03	< 0.30	< 0.20		0.31	1.90	
65	800 m NNE	Silver Maple		0.13	< 0.30	< 0.20		0.28	1.20	<0.22
66	300 m NW	Silver Maple		< 0.03	< 0.30			**2.60**	<0.30	
67	3100 m SE	Silver Maple				< 0.20				<0.87
68	2500 m ESE	Silver Maple				< 0.20				**2.10**
ULN				0.7				2		

Table 19: Concentrations of vanadium in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage				Soil			
			1984	1986	1987	1989	1984	1986	1987	1989
42	1300 m S	Silver Maple	<1	<1	<1	<0.5	31	21	23	27
43	1600 m S	Silver Maple	<1	<1	<1	<0.5	33	31	28	32
44	2200 m SE	Sugar Maple	<1				26			
45	2000 m SE	Sugar Maple	<1				27			
46	1500 m SE	Silver	<1	<1	<1	0.5	20	44	39	33
47	700 m E	Silver	<1			<0.5	25			44
48	1000 m SE	Sugar Maple	<1	<1		<0.5	28	28		35
49	2500 m SE	Sugar Maple	<1				23			
50	1500 m E	Silver Maple	<1	<1	<1	0.5	38	36	33	40
51	350 m E	Silver Maple	2				26			
52	1100 m W	Silver Maple	<1	<1	<1	0.5	25	30	26	31
53	1500 m W	Silver Maple	<1				29			
54	3200 m W	Silver Maple	<1	<1	<1	<0.5	32	24	20	26
55	4500 m W	Silver Maple	<1	<1	<1	0.5	24	25	24	24
56	8100 m W	Silver Maple	<1	<1	<1	<0.5	28	37	33	37
57	850 m ESE	Silver Maple		<1	<1	<0.5		28	27	30
58	800 m SSW	Silver Maple		<1	<1	<0.5		28	26	18
59	1400 m SSW	Silver Maple		<1	<1	<0.5		42	34	42
60	1100 m SE	Silver Maple		<1	<1			38	33	
61	2350 m ESE	Silver Maple		<1	<1			31	24	
62	15 km NNE	Silver Maple		<1	<1	<0.5		29	33	37
63	1350 m SE	Silver Maple		<1	<1	<0.5		31	33	38
64	2400 m SE	Silver Maple		<1	<1			23	29	
65	800 m NNE	Silver Maple		<1	<1	0.5		19	21	28
66	300 m NW	Silver Maple		<1	<1	<0.5		29	29	
67	3100 m SE	Silver Maple				<0.5				16
68	2500 m ESE	Silver Maple				<0.5				42
GLN					5				70	

Table 20: Concentrations of zinc in foliage and soil samples collected in the vicinity Victoria Hospital in London, Ontario, 1984-1989

Site	Location	Species	Foliage				Soil			
			1984	1986	1987	1989	1984	1986	1987	1989
42	1300 m S	Silver Maple	42	27	19	25	55	50	51	45
43	1600 m S	Silver Maple	24	36	39	28	170	68	75	63
44	2200 m SE	Sugar Maple	15				46			
45	2000 m SE	Sugar Maple	12				41			
46	1500 m SE	Silver	10	11	18	43	46	100	950	63
47	700 m E	Silver	12			20	64			370
48	1000 m SE	Sugar Maple	10	13		12	56	56		82
49	2500 m SE	Sugar Maple	9				47			
50	1500 m E	Silver Maple	47	32	45	40	110	87	81	88
51	350 m E	Silver Maple	62				63			
52	1100 m W	Silver Maple	70	40	49	42	66	84	81	140
53	1500 m W	Silver Maple	46				78			
54	3200 m W	Silver Maple	31	27	31	35	58	77	65	56
55	4500 m W	Silver Maple	66	29	35	50	71	110	80	65
56	8100 m W	Silver Maple	18	23	27	16	47	74	60	69
57	850 m ESE	Silver Maple		11	13	14		68	63	61
58	800 m SSW	Silver Maple		36	33	34		61	53	37
59	1400 m SSW	Silver Maple		47	63	34		58	61	89
60	1100 m SE	Silver Maple		29	20			62	65	
61	2350 m ESE	Silver Maple		17	22			60	72	
62	15 km NNE	Silver Maple		23	31	25		63	66	70
63	1350 m SE	Silver Maple		18	15	32		60	86	71
64	2400 m SE	Silver Maple		34	44					
65	800 m NNE	Silver Maple		21	18	20		56	71	150
66	300 m NW	Silver Maple		32	37			62	57	
67	3100 m SE	Silver Maple				23				36
68	2500 m ESE	Silver Maple				26				150
ULN					250				500	

Table 21: Concentrations of cobalt, strontium and aluminum in foliage and soil samples collected in the vicinit Victoria Hospital in London, Ontario, 1989

Site	Location	Species	Foliage Co 1989	Foliage Sr 1989	Foliage Al 1989	Soil Co 1986	Soil Sr 1987	Soil Al 1989
42	1300 m S	Silver Maple	< 0.2	13.0	63	8.9	81.0	9900
43	1600 m S	Silver Maple	< 0.2	11.0	< 24	9.1	68.0	11000
44	2200 m SE	Sugar Maple						
45	2000 m SE	Sugar Maple						
46	1500 m SE	Silver	< 0.3	11.0	97	9.0	29.0	13000
47	700 m E	Silver	< 0.3	21.0	36	14.0	30.0	20000
48	1000 m SE	Sugar Maple	< 0.2	19.0	42	10.0	14.0	14000
49	2500 m SE	Sugar Maple						
50	1500 m E	Silver Maple	< 0.3	26.0	120	13.0	71.0	19000
51	350 m E	Silver Maple						
52	1100 m W	Silver Maple	< 0.2	18.0	77	7.4	48.0	11000
53	1500 m W	Silver Maple						
54	3200 m W	Silver Maple	< 0.2	20.0	49	6.5	28.0	9300
55	4500 m W	Silver Maple	< 0.3	19.0	140	7.3	67.0	9200
56	8100 m W	Silver Maple	< 0.2	22.0	80	7.3	34.0	9700
57	850 m ESE	Silver Maple	< 0.2	7.8	43	9.8	14.0	14000
58	800 m SSW	Silver Maple	< 0.2	18.0	61	4.3	66.0	4300
59	1400 m SSW	Silver Maple	< 0.2	17.0	26	7	74.0	8400
60	1100 m SE	Silver Maple						
61	2350 m ESE	Silver Maple						
62	15 km NNE	Silver Maple	< 0.4	8.6	66	11	19.0	15000
63	1350 m SE	Silver Maple	< 0.2	8.8	30	12	44.0	16000
64	2400 m SE	Silver Maple						
65	800 m NNE	Silver Maple	< 0.2	17.0	51	6.1	44.0	6200
66	300 m NW	Silver Maple						
67	3100 m SE	Silver Maple	< 0.2	8.8	40	4.7	46.0	5700
68	2500 m ESE	Silver Maple	< 0.2	17.0	44	9.4	57.0	16000
ULN			2	not established	500	25	not established	not establishe

Table 22: Concentration of antimony (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	
1	7300 m E	0.15	0.10	0.07	0.11	na	na	na	na	na	na	na
2	5000 m E	0.20	0.21	0.03	0.15	0.31	0.30	0.46	0.24	na	0.33	na
3	2900 m E	0.20	0.15	0.07	0.14	na	na	na	na	na	na	na
4	2000 m E	0.20	0.27	0.07	0.18	0.29	0.36	0.39	0.40	0.42	0.37	na
5	1600 m E	0.15	0.21	0.07	0.14	na	na	na	na	na	na	na
6	1000 m E	0.15	0.15	na	0.15	0.35	0.35	0.35	0.31	0.45	0.36	na
7	500 m E	0.15	0.15	0.20	0.17	0.44	0.35	0.38	0.24	0.32	0.35	na
8	300 m E	0.29	0.21	0.39	0.30	na	na	na	na	na	na	na
9	500 m SE	0.20	na	0.20	0.20	0.33	0.28	0.39	0.03	na	0.26	na
10	1000 m S	0.15	na	0.07	0.11	na	na	na	na	na	na	na
11	500 m S	0.15	0.10	0.07	0.11	0.34	0.28	0.34	0.12	na	0.27	na
12	250 m SW	0.20	0.49	0.14	0.28	na	na	na	na	na	na	na
13	250 m W	0.25	0.10	0.07	0.14	na	na	na	na	na	na	na
14	250 m N	0.25	0.21	0.07	0.18	na	na	na	na	na	na	na
15	500 m W	0.20	na	0.14	0.17	0.35	na	0.26	na	0.41	0.34	na
16	1000 m SW	0.15	0.27	0.14	0.19	0.35	0.38	0.29	0.23	0.39	0.33	na
17	1600 m SE	0.15	0.10	0.03	0.09	na	na	na	na	na	na	na
18	1000 m SE	0.15	0.10	0.03	0.09	0.30	0.25	0.30	na	na	0.28	na
19	1200 m SE	0.10	0.04	0.03	0.06	na	na	na	na	na	na	na
20	2000 m SE	0.18	0.15	0.07	0.13	0.31	0.32	0.33	0.18	0.31	0.29	na
21	3000 m SE	0.29	0.15	0.07	0.17	na	na	na	na	na	na	na
22	5000 m SE	0.20	0.10	0.07	0.12	0.33	0.64	0.33	0.24	0.31	0.37	na
23	8000 m SE	0.20	0.27	0.07	0.18	na	na	na	na	na	na	na
24	5000 m S	0.29	0.27	0.14	0.23	0.39	0.52	0.37	0.32	0.41	0.40	na
25	7000 m SW	0.15	0.10	0.07	0.11	na	na	na	na	na	na	na
26	3000 m S	0.29	0.27	0.14	0.23	0.48	0.56	0.31	na	na	0.45	na
27	4000 m SW	0.20	0.10	0.14	0.15	na	na	na	na	na	na	na
28	7500 m W	0.20	0.10	0.07	0.12	na	na	na	na	na	na	na
29	5000 m W	na	0.10	0.07	0.09	0.31	0.39	0.30	0.57	0.39	0.39	na
30	3000 m W	0.25	0.27	0.07	0.20	na	na	na	na	na	na	na
31	2000 m W	0.20	0.10	0.07	0.12	0.33	0.33	0.34	0.34	na	0.34	na
32	1500 m W	0.20	na	0.07	0.14	na	na	na	na	na	na	na
33	1000 m W	0.25	0.21	0.14	0.20	0.31	0.36	0.40	0.30	0.32	0.34	na
34	1000 m NW	0.20	0.15	0.14	0.16	na	na	na	na	na	na	na
35	500 m N	0.25	0.23	0.33	0.27	0.42	0.45	0.41	0.31	0.43	0.40	na
36	1000 m NE	0.20	0.10	0.20	0.17	0.35	0.38	0.37	0.35	na	0.36	na
37	1500 m N	0.15	0.10	na	0.13	na	na	na	na	na	na	na
38	200 m NW	0.15	0.15	0.07	0.12	na	na	na	na	na	na	na
39	2100 m N	na	na	na	na	0.34	0.41	0.35	0.35	0.47	0.38	na
40	5000 m NW	0.25	0.15	0.07	0.16	na	na	na	na	na	na	na
41	5000 m N	0.20	0.10	na	0.15	0.28	0.34	0.30	0.39	na	0.33	na
57	850 m ESE	na	na	na	na	na	0.29	na	0.31	0.38	0.33	na
58	800 m SSW	na	na	na	na	na	0.29	0.27	0.31	0.28	0.29	na
59	1400 m SSW	na	na	na	na	na	0.29	0.28	0.31	0.08	0.24	na
60	1100 m SE	na	na	na	na	na	na	0.30	na	na	0.30	na
61	2350 m ESE	na	na	na	na	na	0.23	0.28	0.32	0.39	0.31	na
62	15 km NNE	na	na	na	na	na	na	0.25	0.31	0.35	0.30	na
	Mean	0.20	0.17	0.11	0.16	0.35	0.36	0.33	0.29	0.36	0.34	na

Urban ULN = 2
na = no data available

Table 23: Concentration of arsenic (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	
1	7300 m E	0.59	1.80	1.86	1.42	na	na	na	na	na	na	na
2	5000 m E	0.59	1.55	1.86	1.33	2.40	0.68	1.30	0.73	na	1.28	na
3	2900 m E	0.59	1.55	1.86	1.33	na	na	na	na	na	na	na
4	2000 m E	0.99	1.61	1.93	1.51	2.50	1.30	1.10	0.95	na	1.46	na
5	1600 m E	0.86	1.87	1.93	1.55	na	na	na	na	na	na	na
6	1000 m E	0.86	1.68	na	1.27	2.80	0.83	0.89	0.94	1.70	1.43	na
7	500 m E	0.66	1.80	1.93	1.46	1.20	1.10	1.10	0.72	1.20	1.06	na
8	300 m E	0.99	1.80	2.00	1.60	na	na	na	na	na	na	na
9	500 m SE	0.59	na	1.93	1.26	1.00	0.68	0.52	0.43	na	0.66	na
10	1000 m S	0.46	na	1.86	1.16	na	na	na	na	na	na	na
11	500 m S	0.52	1.40	1.86	1.26	1.40	0.55	0.55	0.91	na	0.85	na
12	250 m SW	0.66	1.93	1.93	1.51	na	na	na	na	na	na	na
13	250 m W	0.92	1.61	1.86	1.46	na	na	na	na	na	na	na
14	250 m N	0.59	1.55	1.86	1.33	na	na	na	na	na	na	na
15	500 m W	0.66	na	2.00	1.33	0.92	na	0.85	na	1.70	1.16	na
16	1000 m SW	0.46	1.80	1.72	1.33	1.20	0.56	0.82	0.76	1.20	0.91	na
17	1600 m SE	0.92	1.68	1.79	1.46	na	na	na	na	na	na	na
18	1000 m SE	1.33	1.68	1.86	1.62	0.86	0.57	0.92	na	na	0.78	na
19	1200 m SE	1.26	1.87	1.86	1.66	na	na	na	na	na	na	na
20	2000 m SE	1.44	1.74	1.79	1.66	1.20	1.10	1.10	0.83	1.00	1.05	na
21	3000 m SE	1.47	1.68	1.79	1.65	na	na	na	na	na	na	na
22	5000 m SE	1.47	1.74	1.79	1.67	1.30	1.20	0.92	0.43	1.10	0.99	na
23	8000 m SE	1.33	1.80	1.72	1.62	na	na	na	na	na	na	na
24	5000 m S	1.40	1.87	1.86	1.71	1.30	0.97	0.72	na	0.92	0.98	na
25	*7000 m SW*	*0.79*	*1.74*	*1.86*	1.46	na	na	na	na	na	na	na
26	3000 m S	1.97	1.87	1.86	1.90	1.50	1.40	0.18	na	na	1.03	na
27	4000 m SW	1.83	1.61	1.86	1.77	na	na	na	na	na	na	na
28	7500 m W	1.76	1.80	2.00	1.85	na	na	na	na	na	na	na
29	5000 m W	na	1.99	1.86	1.93	1.30	1.00	na	na	0.84	1.05	na
30	3000 m W	2.05	2.83	1.86	2.25	na	na	na	na	na	na	na
31	2000 m W	1.76	1.74	1.65	1.72	1.20	1.00	0.78	1.00	na	1.00	na
32	1500 m W	1.69	na	1.58	1.64	na	na	na	na	na	na	na
33	1000 m W	1.97	1.93	1.72	1.87	1.30	0.91	1.20	na	0.53	0.99	na
34	1000 m NW	1.90	1.80	1.72	1.81	na	na	na	na	na	na	na
35	500 m N	1.83	2.00	1.79	1.87	1.10	0.99	0.76	0.61	0.47	0.79	na
36	1000 m NE	1.90	1.80	1.72	1.81	1.20	0.91	0.90	0.93	na	0.99	na
37	1500 m N	1.61	1.74	na	1.68	na	na	na	na	na	na	na
38	200 m NW	1.69	1.93	1.72	1.78	na	na	na	na	na	na	na
39	2100 m N	na	na	na	na	1.10	0.90	0.75	0.81	0.66	0.84	na
40	5000 m NW	1.69	1.74	0.34	1.26	na	na	na	na	na	na	na
41	5000 m N	1.65	1.80	na	1.73	0.85	0.39	0.67	1.10	na	0.75	na
57	850 m ESE	na	na	na	na	na	1.30	na	1.00	0.29	0.86	na
58	800 m SSW	na	na	na	na	na	0.91	0.83	0.70	na	0.81	na
59	1400 m SSW	na	na	na	na	na	0.77	0.48	0.97	0.96	0.80	na
60	1100 m SE	na	na	na	na	na	na	0.86	na	na	0.86	na
61	2350 m ESE	na	na	na	na	na	1.00	0.66	0.70	1.20	0.89	na
62	15 km NNE	na	na	na	na	na	na	0.56	1.20	0.76	0.84	na
	Mean	1.22	1.79	1.79	1.59	1.38	0.91	0.81	0.83	0.97	0.97	na

ULN = 2
na = data not available

Table 24: Concentration of cadmium (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990	
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	May	June
1	7300 m E	0.3	0.5	0.3	0.4	na	na	na	na	na	na	na	
2	5000 m E	0.3	0.4	0.3	0.3	0.4	0.5	0.4	0.4	1.5	0.6	0.3	0.33
3	2900 m E	0.3	0.4	0.3	0.3	na	na	na	na	na	na	na	
4	2000 m E	0.3	0.5	0.3	0.4	0.5	0.7	0.5	0.5	0.6	0.6	0.4	0.2
5	1600 m E	0.3	0.4	0.3	0.3	na	na	na	na	na	na	na	
6	1000 m E	0.3	0.5	na	0.4	0.5	0.5	0.6	0.5	0.7	0.6	0.2	0.2
7	500 m E	0.3	0.5	0.3	0.4	0.5	0.5	0.3	0.4	0.7	0.5	1.1	1.2
8	300 m E	0.6	0.6	0.6	0.6	na	na	na	na	na	na	na	
9	500 m SE	0.3	0.5	0.3	0.4	0.5	0.4	0.4	0.4	1.0	0.5	0.3	0.2
10	1000 m S	0.3	0.4	0.3	0.3	na	na	na	na	na	na	na	
11	500 m S	0.3	0.5	0.3	0.4	0.6	0.4	0.3	0.3	2.5	0.8	0.2	0.2
12	250 m SW	0.3	0.4	0.3	0.3	na	na	na	na	na	na	na	
13	250 m W	0.5	0.4	0.4	0.4	na	na	na	na	na	na	na	
14	250 m N	0.2	0.4	0.3	0.3	na	na	na	na	na	na	na	
15	500 m W	0.2	na	0.3	0.3	0.5	na	0.3	0.3	0.7	0.5	0.4	0.2
16	1000 m SW	0.2	0.5	0.3	0.3	0.6	0.5	0.3	0.5	0.6	0.5	0.5	0.4
17	1600 m SE	0.2	0.4	0.3	0.3	na	na	na	na	na	na	na	
18	1000 m SE	0.2	0.4	0.3	0.3	0.4	0.4	0.3	0.4	na	0.4	na	
19	1200 m SE	0.3	0.4	0.2	0.3	na	na	na	na	na	na	na	
20	2000 m SE	0.2	0.4	0.3	0.3	0.1	0.4	0.3	0.6	0.7	0.4	0.3	0.3
21	3000 m SE	0.2	0.4	0.3	0.3	na	na	na	na	na	na	na	
22	5000 m SE	0.2	0.5	0.3	0.3	0.5	0.5	0.3	0.4	0.5	0.4	0.2	0.2
23	8000 m SE	0.3	0.4	0.3	0.3	na	na	na	na	na	na	na	
24	5000 m S	0.3	0.5	0.3	0.4	0.5	0.5	0.3	0.2	0.6	0.4	0.4	0.1
25	7000 m SW	0.2	0.4	0.3	0.3	na	na	na	na	na	na	na	
26	3000 m S	0.3	0.6	0.3	0.4	0.4	0.7	0.3	0.6	0.7	0.5	0.2	0.1
27	4000 m SW	0.2	0.4	0.3	0.3	na	na	na	na	na	na	na	
28	7500 m W	1.3	6.7	8.9	5.6	na	na	na	na	na	na	na	
29	5000 m W	na	0.9	0.4	0.7	0.6	0.6	0.6	0.7	0.7	0.6	0.4	0.2
30	3000 m W	0.2	0.5	0.3	0.3	na	na	na	na	na	na	na	
31	2000 m W	0.2	0.4	0.4	0.3	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.1
32	1500 m W	0.3	na	0.3	0.3	na	na	na	na	na	na	na	
33	1000 m W	0.2	0.5	0.3	0.3	0.5	0.5	0.3	0.4	0.5	0.4	0.4	0.1
34	1000 m NW	0.2	0.4	0.3	0.3	na	na	na	na	na	na	na	
35	500 m N	0.2	0.7	0.4	0.4	0.7	0.8	0.4	0.5	0.5	0.6	0.4	0.4
36	1000 m NE	0.2	0.3	0.4	0.3	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.3
37	1500 m N	0.2	0.3	na	0.3	na	na	na	na	na	na	na	
38	200 m NW	0.2	0.3	0.3	0.3	na	na	na	na	na	na	na	
39	2100 m N	na	na	na	na	0.4	0.5	0.3	0.4	0.6	0.4	0.4	1.2
40	5000 m NW	0.3	0.4	0.3	0.3	na	na	na	na	na	na	na	
41	5000 m N	1.4	1.7	na	1.5	4.0	2.1	0.8	2.4	2.4	2.3	1.0	0.2
57	850 m ESE	na	na	na	na	na	0.4	na	0.4	0.3	0.4	na	
58	800 m SSW	na	na	na	na	na	0.4	0.4	0.3	0.4	0.4	0.3	0.2
59	1400 m SSW	na	na	na	na	na	0.3	0.4	0.3	0.3	0.3	0.3	0.2
60	1100 m SE	na	na	na	na	na	na	0.4	na	na	0.4	na	
61	2350 m ESE	na	na	na	na	na	0.4	0.4	0.6	0.4	0.5	na	
62	15 km NNE	na	na	na	na	na	na	0.4	0.4	1.5	0.8	na	
	Mean	0.3	0.7	0.6	0.5	0.7	0.6	0.4	0.5	0.8	0.6	1.1	0.7

ULN = 4
na = no data available
Values in bold indicate a measurable trace amount, interpret with caution. As a result not included in mean.

Table 25: Concentration of calcium (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	
1	7300 m E	4000	4100	4900	4,333	na	na	na	na	na	na	na
2	5000 m E	3900	4800	4800	4,500	3300	3700	3700	5500	4900	4,220	na
3	2900 m E	4000	5200	5100	4,767	na	na	na	na	na	na	na
4	2000 m E	4600	8000	5600	6,067	5000	4900	4800	5600	18000	7,660	na
5	1600 m E	4500	8400	5900	6,267	na	na	na	na	na	na	na
6	1000 m E	4500	8800	na	6,650	4500	5300	4700	3800	8000	5,260	na
7	500 m E	5000	13000	7000	8,333	5600	5300	4800	5200	7200	5,620	na
8	300 m E	12000	36000	30000	26,000	na	na	na	na	na	na	na
9	500 m SE	4300	5700	6500	5,500	3300	3000	3900	2500	3200	3,180	na
10	1000 m S	3600	5400	3700	4,233	na	na	na	na	na	na	na
11	500 m S	4000	7700	4000	5,233	2700	4400	3300	3500	4300	3,640	na
12	250 m SW	5800	31000	4700	13,833	na	na	na	na	na	na	na
13	250 m W	14000	4900	27000	15,300	na	na	na	na	na	na	na
14	250 m N	7200	10000	18000	11,733	na	na	na	na	na	na	na
15	500 m W	10000	na	7000	8,500	5500	na	4700	4000	6900	5,275	na
16	1000 m SW	5000	11000	7000	7,667	5800	6600	6600	7700	7800	6,900	na
17	1600 m SE	3600	4200	4100	3,967	na	na	na	na	na	na	na
18	1000 m SE	3200	3900	3300	3,467	2400	3700	5200	4400	na	3,925	na
19	1200 m SE	3900	3700	3500	3,700	na	na	na	na	na	na	na
20	2000 m SE	4600	4700	5500	4,933	4300	3800	3100	19000	5400	7,120	na
21	3000 m SE	4100	4400	4600	4,367	na	na	na	na	na	na	na
22	5000 m SE	16000	23000	20000	19,667	10000	10000	12000	9400	13000	10,880	na
23	8000 m SE	4000	4300	4000	4,100	na	na	na	na	na	na	na
24	5000 m S	8100	11000	8600	9,233	8200	7900	9700	6300	11000	8,620	na
25	7000 m SW	3400	4400	3900	3,900	na	na	na	na	na	na	na
26	3000 m S	7100	11000	10000	9,367	9000	9500	5100	5700	6600	7,180	na
27	4000 m SW	3800	4400	4400	4,200	na	na	na	na	na	na	na
28	7500 m W	3500	4400	3900	3,933	na	na	na	na	na	na	na
29	5000 m W	na	5000	5800	5,400	3800	5400	4400	3800	6000	4,680	na
30	3000 m W	4100	5700	4500	4,767	na	na	na	na	na	na	na
31	2000 m W	3700	6700	5600	5,333	4400	4700	4400	4900	4800	4,640	na
32	1500 m W	3300	na	4800	4,050	na	na	na	na	na	na	na
33	1000 m W	4000	13000	11000	9,333	5100	5400	4900	5900	6600	5,580	na
34	1000 m NW	6400	10000	6800	7,733	na	na	na	na	na	na	na
35	500 m N	6900	12000	8300	9,067	5200	6400	6100	3100	10000	6,160	na
36	1000 m NE	3500	4500	4200	4,067	2800	3900	3500	4100	3300	3,520	na
37	1500 m N	3100	4000	na	3,550	na	na	na	na	na	na	na
38	200 m NW	4100	5800	4800	4,900	na	na	na	na	na	na	na
39	2100 m N	na	na	na	na	3000	4500	3800	3500	4900	3,940	na
40	5000 m NW	4200	4200	3900	4,100	na	na	na	na	na	na	na
41	5000 m N	4300	4700	na	4,500	5500	4600	4200	2800	4600	4,340	na
57	850 m ESE	na	na	na	na	na	3100	na	3100	3600	3,267	na
58	800 m SSW	na	na	na	na	na	3200	4400	6000	4400	4,500	na
59	1400 m SS	na	na	na	na	na	6100	3700	3400	7800	5,250	na
60	1100 m SE	na	na	na	na	na	na	2600	na	na	2,600	na
61	2350 m ESE	na	na	na	na	na	3200	2600	2900	3600	3,075	na
62	15 km NNE	na	na	na	na	na	na	2700	3400	3700	3,267	na
	Mean	5367	8500	7478	7014	4970	5157	4756	5180	6650	5165	na

ULN - not established
na - no data available

Table 26 : Concentration of chlorine (% dry weight) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	
1	7300 m E	0.01	0.01	na	0.01	na	na	na	na	na	na	na
2	5000 m E	0.01	0.01	0.03	0.02	0.01	0.02	0.02	0.02	0.02	0.02	na
3	2900 m E	0.01	0.01	0.03	0.02	na	na	na	na	na	na	na
4	2000 m E	0.02	0.01	0.04	0.02	0.03	0.02	0.03	0.02	0.04	0.03	na
5	1600 m E	0.02	0.01	0.04	0.02	na	na	na	na	na	na	na
6	1000 m E	0.02	na	na	0.02	0.02	0.01	0.04	0.02	0.03	0.02	na
7	500 m E	0.02	0.01	0.03	0.02	0.02	0.01	0.04	0.02	0.03	0.02	na
8	300 m E	0.04	0.01	0.10	0.05	na	na	na	na	na	na	na
9	500 m SE	0.02	0.01	0.04	0.02	0.02	0.01	0.03	0.02	0.02	0.02	na
10	1000 m S	0.01	0.01	0.03	0.02	na	na	na	na	na	na	na
11	500 m S	0.02	0.01	0.05	0.03	0.02	0.01	0.03	0.02	0.03	0.02	na
12	250 m SW	0.02	0.06	na	0.04	na	na	na	na	na	na	na
13	250 m W	0.04	0.01	na	0.03	na	na	na	na	na	na	na
14	250 m N	0.04	0.01	0.02	0.02	na	na	na	na	na	na	na
15	500 m W	0.03	na	0.06	0.05	0.02	na	0.03	0.01	0.03	0.02	na
16	1000 m SW	0.02	0.01	na	0.02	0.03	0.01	0.05	0.02	0.03	0.03	na
17	1600 m SE	0.01	0.01	na	0.01	na	na	na	na	na	na	na
18	1000 m SE	0.01	0.01	0.01	0.01	0.02	0.01	0.02	na	na	0.02	na
19	1200 m SE	0.01	0.01	0.02	0.01	na	na	na	na	na	na	na
20	2000 m SE	0.02	0.01	0.03	0.02	0.02	0.01	0.03	0.02	0.02	0.02	na
21	3000 m SE	0.02	na	0.03	0.03	na	na	na	na	na	na	na
22	5000 m SE	0.07	0.01	0.05	0.04	0.05	0.02	0.03	0.15	0.04	0.06	na
23	8000 m SE	0.01	0.01	0.04	0.02	na	na	na	na	na	na	na
24	5000 m S	0.04	0.01	0.05	0.03	0.04	0.02	0.03	0.03	0.04	0.03	na
25	7000 m SW	0.01	0.01	0.02	0.01	na	na	na	na	na	na	na
26	3000 m S	0.02	0.01	na	0.02	0.04	0.01	0.02	0.02	0.02	0.02	na
27	4000 m SW	0.01	0.01	0.03	0.02	na	na	na	na	na	na	na
28	7500 m W	0.01	0.01	na	0.01	na	na	na	na	na	na	na
29	5000 m W	na	0.01	0.05	0.03	0.02	0.01	0.04	0.02	0.02	0.02	na
30	3000 m W	0.01	0.01	0.03	0.02	na	na	na	na	na	na	na
31	2000 m W	0.01	0.01	0.03	0.02	0.02	0.02	0.04	0.02	0.03	0.03	na
32	1500 m W	0.01	na	na	0.01	na	na	na	na	na	na	na
33	1000 m W	0.01	0.01	na	0.01	0.02	0.01	0.04	0.02	0.03	0.02	na
34	1000 m NW	0.02	0.01	0.03	0.02	na	na	na	na	na	na	na
35	500 m N	0.05	0.01	0.05	0.04	0.03	0.01	0.05	0.02	0.04	0.03	na
36	1000 m NE	0.01	0.01	0.02	0.01	0.02	0.02	0.04	0.02	0.02	0.02	na
37	1500 m N	0.01	0.01	na	0.01	na	na	na	na	na	na	na
38	200 m NW	0.01	0.01	0.02	0.01	na	na	na	na	na	na	na
39	2100 m N	na	na	na	na	0.02	0.01	0.03	0.01	0.02	0.02	na
40	5000 m NW	0.01	0.01	0.02	0.01	na	na	na	na	na	na	na
41	5000 m N	0.01	0.01	na	0.01	0.02	0.01	0.04	0.01	0.02	0.02	na
57	850 m ESE	na	na	na	na	na	0.01	na	0.03	0.02	0.02	na
58	800 m SSW	na	na	na	na	na	0.02	0.03	0.02	0.04	0.03	na
59	1400 m SSW	na	na	na	na	na	0.01	0.02	0.01	0.02	0.02	na
60	1100 m SE	na	na	na	na	na	na	0.03	na	na	0.03	na
61	2350 m ESE	na	na	na	na	na	0.01	0.02	0.01	0.02	0.02	na
62	15 km NNE	na	na	na	na	na	na	0.02	0.01	0.02	0.02	na
	Mean	0.02	0.01	0.04	0.02	0.02	0.01	0.03	0.02	0.03	0.02	na

ULN - not established
na - no data available

Table 27: Concentration of chromium (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990	
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	May	June
1	7300 m E	2	2	2	2	na	na	na	na	na	na	na	
2	5000 m E	2	2	2	2	5	5	3	2	3	4	3	2
3	2900 m E	2	1	2	2	na	na	na	na	na	na	na	
4	2000 m E	2	2	2	2	5	6	2	3	4	4	4	2
5	1600 m E	2	3	2	2	na	na	na	na	na	na	na	
6	1000 m E	2	3	na	3	5	5	3	2	2	3	2	1
7	500 m E	2	3	2	2	5	8	3	3	2	4	2	2
8	300 m E	4	5	5	5	na	na	na	na	na	na	na	
9	500 m SE	2	2	2	2	4	4	2	2	2	3	1	1
10	1000 m S	2	2	2	2	na	na	na	na	na	na	na	
11	500 m S	2	2	2	2	4	4	2	2	0.3	2	1	1
12	250 m SW	2	4	2	3	na	na	na	na	na	na	na	
13	250 m W	4	2	4	3	na	na	na	na	na	na	na	
14	250 m N	2	2	3	2	na	na	na	na	na	na	na	
15	500 m W	3	na	3	3	6	na	3	4	2	4	3	2
16	1000 m SW	2	4	3	3	6	6	3	3	3	4	3	3
17	1600 m SE	2	2	2	2	na	na	na	na	na	na	na	
18	1000 m SE	2	2	2	2	4	4	3	na	na	4	na	
19	1200 m SE	2	2	2	2	na	na	na	na	na	na	na	
20	2000 m SE	2	2	2	2	4	5	2	2	2	3	2	2
21	3000 m SE	2	2	2	2	na	na	na	na	na	na	na	
22	5000 m SE	3	4	3	3	6	6	3	3	3	4	2	3
23	8000 m SE	2	2	2	2	na	na	na	na	na	na	na	
24	5000 m S	3	4	3	3	6	4	5	3	3	4	2	2
25	7000 m SW	2	2	2	2	na	na	na	na	na	na	na	
26	3000 m S	3	4	3	3	7	7	2	3	2	4	3	2
27	4000 m SW	2	2	2	2	na	na	na	na	na	na	na	
28	7500 m W	2	2	2	2	na	na	na	na	na	na	na	
29	5000 m W	na	2	2	2	5	5	2	2	3	3	2	2
30	3000 m W	3	4	3	3	na	na	na	na	na	na	na	
31	2000 m W	2	2	2	2	5	5	2	2	4	4	2	2
32	1500 m W	2	na	2	2	na	na	na	na	na	na	na	
33	1000 m W	2	3	3	3	5	5	2	3	3	4	2	2
34	1000 m NW	2	2	2	2	na	na	na	na	na	na	na	
35	500 m N	3	3	4	3	5	6	2	2	3	4	3	3
36	1000 m NE	2	2	2	2	4	5	2	2	2	3	2	1
37	1500 m N	2	1	na	2	na	na	na	na	na	na	na	
38	200 m NW	2	2	2	2	na	na	na	na	na	na	na	
39	2100 m N	na	na	na	na	4	5	2	2	2	3	3	na
40	5000 m NW	2	2	2	2	na	na	na	na	na	na	na	
41	5000 m N	2	2	na	2	7	5	2	3	2	4	2	2
57	850 m ESE	na	na	na	na	na	5	na	2	2	3	na	
58	800 m SSW	na	na	na	na	na	4	2	3	2	3	1	1
59	1400 m SSW	na	na	na	na	na	4	2	2	2	3	2	1
60	1100 m SE	na	na	na	na	na	na	3	na	na	3	na	
61	2350 m ESE	na	na	na	na	na	4	1	2	2	2	na	
62	15 km NNE	na	na	na	na	na	na	3	4	2	3	na	
	Mean	2	3	2	2	5	5	2	3	3	3	2	3

ULN = 7
na = no data available
Note: Values in bold indicate measurable trace amounts, interpret with caution.

Table 28: Concentration of copper (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990	
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	May	June
1	7300 m E	3	5	5	4	na	na	na	na	na	na	na	
2	5000 m E	4	6	6	5	6	7	6	7	7	7	8	11
3	2900 m E	4	6	6	5	na	na	na	na	na	na	na	
4	2000 m E	4	8	6	6	8	8	8	9	10	9	12	17
5	1600 m E	4	11	7	7	na	na	na	na	na	na	na	
6	1000 m E	6	11	na	9	8	8	8	8	10	8	6	10
7	500 m E	5	10	9	8	11	9	6	11	11	10	19	17
8	300 m E	16	26	21	21	na	na	na	na	na	na	na	
9	500 m SE	3	6	6	5	5	5	5	5	5	5	18	14
10	1000 m S	3	6	4	4	na	na	na	na	na	na	na	
11	500 m S	3	6	5	5	5	6	4	5	25	9	7	8
12	250 m SW	4	9	6	6	na	na	na	na	na	na	na	
13	250 m W	5	5	10	7	na	na	na	na	na	na	na	
14	250 m N	4	6	13	8	na	na	na	na	na	na	na	
15	500 m W	5	na	11	8	9	na	7	7	10	8	10	14
16	1000 m SW	6	13	10	10	12	11	8	14	14	12	17	16
17	1600 m SE	11	17	10	13	na	na	na	na	na	na	na	
18	1000 m SE	3	5	4	4	5	5	6	na	na	5	na	
19	1200 m SE	3	6	4	4	na	na	na	na	na	na	na	
20	2000 m SE	4	7	5	5	5	5	5	6	7	6	11	15
21	3000 m SE	4	6	6	5	na	na	na	na	na	na	na	
22	5000 m SE	5	9	6	7	6	6	6	7	7	6	9	11
23	8000 m SE	4	11	14	10	na	na	na	na	na	na	na	
24	5000 m S	17	24	11	17	14	11	14	12	16	13	8	15
25	7000 m SW	3	5	5	4	na	na	na	na	na	na	na	
26	3000 m S	7	13	8	9	10	11	9	10	9	10	10	16
27	4000 m SW	4	6	6	5	na	na	na	na	na	na	na	
28	7500 m W	5	12	6	8	na	na	na	na	na	na	na	
29	5000 m W	na	18	12	15	12	12	9	14	15	12	40	16
30	3000 m W	4	9	6	6	na	na	na	na	na	na	na	
31	2000 m W	6	11	8	8	9	10	6	8	9	8	9	16
32	1500 m W	31	na	25	28	na	na	na	na	na	na	na	
33	1000 m W	4	9	8	7	7	7	7	8	11	8	8	14
34	1000 m NW	4	6	5	5	na	na	na	na	na	na	na	
35	500 m N	6	9	12	9	10	10	9	11	15	11	14	23
36	1000 m NE	9	11	13	11	9	10	9	10	16	11	31	18
37	1500 m N	6	9	na	8	na	na	na	na	na	na	na	
38	200 m NW	4	6	5	5	na	na	na	na	na	na	na	
39	2100 m N	na	na	na	na	7	9	6	7	7	7	11	na
40	5000 m NW	3	5	5	4	na	na	na	na	na	na	na	
41	5000 m N	25	41	na	33	12	15	15	21	33	19	43	41
57	850 m ESE	na	na	na	na	na	4	na	4	5	4	na	
58	800 m SSW	na	na	na	na	na	6	5	5	6	6	8	7
59	1400 m SSW	na	na	na	na	na	4	4	4	5	4	8	6
60	1100 m SE	na	na	na	na	na	na	5	na	na	5	na	
61	2350 m ESE	na	na	na	na	na	5	4	5	5	5	na	
62	15 km NNE	na	na	na	na	na	na	5	5	6	5	na	
	Mean	6	10	8	9	9	8	7	9	11	8	15	15

ULN = 60
na = no data available

Table 29: Concentration of fluorine (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	
1	7300 m E	2	2	4	3	na	na	na	na	na	na	na
2	5000 m E	2	2	4	3	11	9	16	na	na	12	na
3	2900 m E	2	1	4	2	na	na	na	na	na	na	na
4	2000 m E	2	2	6	3	12	14	14	na	39	20	na
5	1600 m E	2	2	7	4	na	na	na	na	na	na	na
6	1000 m E	2	2	na	2	11	na	16	11	na	13	na
7	500 m E	2	3	5	3	11	15	18	13	na	14	na
8	300 m E	3	4	10	6	na	na	na	na	na	na	na
9	500 m SE	2	2	6	3	10	na	14	6	na	10	na
10	1000 m S	2	1	3	2	na	na	na	na	na	na	na
11	500 m S	2	1	3	2	8	8	12	14	na	11	na
12	250 m SW	2	4	4	3	na	na	na	na	na	na	na
13	250 m W	3	1	9	4	na	na	na	na	na	na	na
14	250 m N	3	1	4	3	na	na	na	na	na	na	na
15	500 m W	4	na	8	6	8	na	na	na	na	8	na
16	1000 m SW	3	1	7	4	11	14	17	18	na	15	na
17	1600 m SE	2	1	4	2	na	na	na	na	na	na	na
18	1000 m SE	2	1	3	2	7	6	11	na	na	8	na
19	1200 m SE	4	1	3	3	na	na	na	na	na	na	na
20	2000 m SE	2	1	4	2	9	9	14	na	na	11	na
21	3000 m SE	2	2	5	3	na	na	na	na	na	na	na
22	5000 m SE	4	5	8	6	11	22	22	30	na	21	na
23	8000 m SE	2	1	4	2	na	na	na	na	na	na	na
24	5000 m S	3	3	6	4	10	18	26	22	na	19	na
25	7000 m SW	1	1	3	2	na	na	na	na	na	na	na
26	3000 m S	3	3	6	4	15	19	14	na	na	16	na
27	4000 m SW	2	1	4	2	na	na	na	na	na	na	na
28	7500 m W	1	1	2	1	na	na	na	na	na	na	na
29	5000 m W	na	2	5	4	15	na	15	na	na	15	na
30	3000 m W	2	1	3	2	na	na	na	na	na	na	na
31	2000 m W	2	3	5	3	11	15	15	13	na	14	na
32	1500 m W	1	na	5	3	na	na	na	na	na	na	na
33	1000 m W	2	3	9	5	11	na	16	12	21	15	na
34	1000 m NW	2	3	4	3	na	na	na	na	na	na	na
35	500 m N	3	4	7	5	13	14	19	15	na	15	na
36	1000 m NE	2	2	3	2	10	na	12	12	na	11	na
37	1500 m N	2	3	na	3	na	na	na	na	na	na	na
38	200 m NW	1	2	2	2	na	na	na	na	na	na	na
39	2100 m N	na	na	na	na	10	12	12	10	na	11	na
40	5000 m NW	1	1	2	1	na	na	na	na	na	na	na
41	5000 m N	1	2	na	2	8	na	13	10	na	10	na
57	850 m ESE	na	na	na	na	na	na	na	12	na	12	na
58	800 m SSW	na	na	na	na	na	10	13	12	na	12	na
59	1400 m SSW	na	na	na	na	na	8	10	12	na	10	na
60	1100 m SE	na	na	na	na	na	na	10	na	na	10	na
61	2350 m ESE	na	na	na	na	na	9	11	12	na	11	na
62	15 km NNE	na	na	na	na	na	na	9	11	na	10	na
	Mean	2	2	5	3	11	13	15	14	30	13	na

ULN - not established
na - no data available

Table 30 : Concentration of iron (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990	
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	May	June
1	7300 m E	820	1100	1000	973	na	na	na	na	na	na	na	
2	5000 m E	828	1100	1100	1,009	710	1100	1500	1100	1200	1,122	2300	1200
3	2900 m E	840	160	1100	700	na	na	na	na	na	na	na	
4	2000 m E	960	1200	1100	1,087	810	1400	1200	1500	2100	1,402	2200	1400
5	1600 m E	930	1300	1100	1,110	na	na	na	na	na	na	na	
6	1000 m E	1000	1300	na	1,150	920	1100	1200	1200	1500	1,184	1100	870
7	500 m E	910	1500	1100	1,170	920	1300	1100	1000	1200	1,104	1200	1200
8	300 m E	1400	2200	2200	1,933	na	na	na	na	na	na	na	
9	500 m SE	840	1200	1000	1,013	720	950	1100	770	840	876	1200	790
10	1000 m S	810	1100	840	917	na	na	na	na	na	na	na	
11	500 m S	800	1300	940	1,013	720	970	1000	1100	1100	978	1200	970
12	250 m SW	1000	2200	1100	1,433	na	na	na	na	na	na	na	
13	250 m W	1700	1100	2100	1,633	na	na	na	na	na	na	na	
14	250 m N	940	1300	1600	1,280	na	na	na	na	na	na	na	
15	500 m W	1300	na	1200	1,250	920	na	1100	1200	1400	1,155	2400	1300
16	1000 m SW	970	1700	1200	1,290	1000	1400	1000	1400	1400	1,240	1700	1300
17	1600 m SE	860	1000	930	930	na	na	na	na	na	na	na	
18	1000 m SE	780	1000	850	877	580	940	1200	1100	na	955	na	
19	1200 m SE	780	980	860	873	na	na	na	na	na	na	na	
20	2000 m SE	880	1100	890	9[illegible]	790	1300	1100	1400	1200	1,158	1300	1100
21	3000 m SE	910	1100	1000	1,003	na	na	na	na	na	na	na	
22	5000 m SE	1100	1600	1300	1,333	890	1400	1400	1400	1200	1,258	1300	1200
23	8000 m SE	850	1100	1000	983	na	na	na	na	na	na	na	
24	5000 m S	1200	1700	1200	1,367	1100	1300	1400	1400	1600	1,360	1400	1500
25	7000 m SW	790	940	880	870	na	na	na	na	na	na	na	
26	3000 m S	1200	1800	1300	1,433	1100	1700	1300	1400	1300	1,360	1700	1000
27	4000 m SW	860	1000	950	937	na	na	na	na	na	na	na	
28	7500 m W	810	1100	880	930	na	na	na	na	na	na	na	
29	5000 m W	na	1200	1000	1,100	850	1200	1100	1100	1200	1,090	1500	1200
30	3000 m W	880	1200	1000	1,027	na	na	na	na	na	na	na	
31	2000 m W	880	1200	1100	1,060	830	1200	1100	900	1200	1,046	1300	990
32	1500 m W	840	na	920	880	na	na	na	na	na	na	na	
33	1000 m W	890	1500	1200	1,197	890	1200	1200	1200	1100	1,118	1700	1300
34	1000 m NW	940	1300	1000	1,080	na	na	na	na	na	na	na	
35	500 m N	1100	1400	1300	1,267	820	1400	1300	1200	1000	1,144	1700	1500
36	1000 m NE	870	1000	1000	957	700	960	1200	1100	930	978	1300	770
37	1500 m N	800	920	na	860	na	na	na	na	na	na	na	
38	200 m NW	900	1100	990	997	na	na	na	na	na	na	na	
39	2100 m N	na	na	na	na	680	1000	1100	980	930	938	1900	na
40	5000 m NW	920	930	990	947	na	na	na	na	na	na	na	
41	5000 m N	900	1100	na	1,000	970	1100	1000	1100	1000	1,034	1300	1100
57	850 m ESE	na	na	na	na	na	1200	na	1000	920	1,040	na	
58	800 m SSW	na	na	na	na	na	930	900	1100	910	960	1200	800
59	1400 m SSW	na	na	na	na	na	850	920	1100	930	950	1300	820
60	1100 m SE	na	na	na	na	na	na	970	na	na	970	na	
61	2350 m ESE	na	na	na	na	na	940	990	1000	960	973	na	
62	15 km NNE	na	na	na	na	na	na	850	1100	920	957	na	
	Mean	948	1238	1114	1096	846	1167	1129	1154	1168	1090	1533	1115

ULN = 3000
na = no data available

Table 31: Concentration of lead (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990	
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	May	June
1	7300 m E	28	36	33	32	na	na	na	na	na	na	na	
2	5000 m E	32	50	36	39	37	41	52	49	52	46	44	45
3	2900 m E	33	43	40	39	na	na	na	na	na	na	na	
4	2000 m E	44	91	59	65	59	60	57	71	75	64	45	43
5	1600 m E	43	96	82	74	na	na	na	na	na	na	na	
6	1000 m E	57	100	na	79	78	61	62	68	94	73	41	36
7	500 m E	52	82	66	67	73	62	51	53	66	61	37	38
8	300 m E	81	68	91	80	na	na	na	na	na	na	na	
9	500 m SE	19	37	23	26	25	29	35	21	32	28	50	46
10	1000 m S	19	33	19	24	na	na	na	na	na	na	na	
11	500 m S	20	41	19	27	34	36	36	26	27	32	34	37
12	250 m SW	25	85	25	45	na	na	na	na	na	na	na	
13	250 m W	49	37	56	47	na	na	na	na	na	na	na	
14	250 m N	21	39	63	41	na	na	na	na	na	na	na	
15	500 m W	43	na	62	53	150	na	56	58	71	84	43	46
16	1000 m SW	64	170	63	99	71	77	53	86	80	73	48	45
17	1600 m SE	22	44	27	31	na	na	na	na	na	na	na	
18	1000 m SE	15	29	17	20	29	32	50	na	na	37	na	
19	1200 m SE	16	22	16	18	na	na	na	na	na	na	na	
20	2000 m SE	29	51	27	36	26	42	30	45	48	38	42	39
21	3000 m SE	27	45	34	35	na	na	na	na	na	na	na	
22	5000 m SE	19	37	25	27	32	36	41	39	35	37	60	39
23	8000 m SE	16	29	21	22	na	na	na	na	na	na	na	
24	5000 m S	67	120	46	78	74	70	63	53	72	66	41	43
25	7000 m SW	17	37	22	25	na	na	na	na	na	na	na	
26	3000 m S	91	160	56	102	95	150	64	92	80	96	35	28
27	4000 m SW	30	61	45	45	na	na	na	na	na	na	na	
28	7500 m W	22	35	23	27	na	na	na	na	na	na	na	
29	5000 m W	na	51	49	50	54	49	46	62	48	52	60	33
30	3000 m W	41	63	40	48	na	na	na	na	na	na	na	
31	2000 m W	32	58	50	47	61	53	45	36	56	50	35	31
32	1500 m W	27	na	38	33	na	na	na	na	na	na	na	
33	1000 m W	31	62	68	54	55	50	46	53	65	54	40	37
34	1000 m NW	27	52	29	36	na	na	na	na	na	na	na	
35	500 m N	38	87	50	58	69	68	56	63	63	64	46	54
36	1000 m NE	19	33	21	24	35	33	37	37	36	36	40	37
37	1500 m N	18	34	na	26	na	na	na	na	na	na	na	
38	200 m NW	31	85	29	48	na	na	na	na	na	na	na	
39	2100 m N	na	na	na	na	34	43	34	39	39	38	55	na
40	5000 m NW	25	39	25	30	na	na	na	na	na	na	na	
41	5000 m N	53	53	na	53	74	49	45	48	49	53	51	47
57	850 m ESE	na	na	na	na	na	29	na	28	28	28	na	
58	800 m SSW	na	na	na	na	na	24	32	27	30	28	42	30
59	1400 m SSW	na	na	na	na	na	22	31	31	27	28	35	27
60	1100 m SE	na	na	na	na	na	na	33	na	na	33	na	
61	2350 m ESE	na	na	na	na	na	29	39	37	26	33	na	
62	15 km NNE	na	na	na	na	na	na	34	32	28	31	na	
	Mean	34	60	40	45	58	50	45	48	51	49	44	39

ULM = 200
na = no data available

Table 32: Concentration of magnesium (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	
1	7300 m E	870	970	1000	947	na	na	na	na	na	na	na
2	5000 m E	890	1000	1000	963	890	890	960	1100	1200	1,008	na
3	2900 m E	880	1100	1100	1,027	na	na	na	na	na	na	na
4	2000 m E	970	1500	1100	1,190	1200	1000	1100	1100	3300	1,540	na
5	1600 m E	970	1700	1200	1,290	na	na	na	na	na	na	na
6	1000 m E	940	1800	na	1,370	1100	1100	1100	930	1600	1,166	na
7	500 m E	1000	2400	1500	1,633	1300	1100	1100	1200	1600	1,260	na
8	300 m E	2100	6500	6300	4,967	na	na	na	na	na	na	na
9	500 m SE	970	1100	1300	1,123	880	760	980	770	970	872	na
10	1000 m S	850	1100	910	953	na	na	na	na	na	na	na
11	500 m S	880	1500	930	1,103	800	920	880	870	1200	934	na
12	250 m SW	1100	5900	1000	2,667	na	na	na	na	na	na	na
13	250 m W	2400	930	5400	2,910	na	na	na	na	na	na	na
14	250 m N	1300	1800	3800	2,300	na	na	na	na	na	na	na
15	500 m W	1900	na	1400	1,650	1200	na	1100	920	1400	1,155	na
16	1000 m SW	1000	1900	1400	1,433	1300	1300	1300	1500	1700	1,420	na
17	1600 m SE	840	900	940	893	na	na	na	na	na	na	na
18	1000 m SE	790	900	800	830	660	870	1200	na	na	910	na
19	1200 m SE	960	960	840	920	na	na	na	na	na	na	na
20	2000 m SE	990	990	1100	1,027	1000	930	870	970	1300	1,014	na
21	3000 m SE	910	910	1000	940	na	na	na	na	na	na	na
22	5000 m SE	2500	3500	2800	2,933	2000	1900	2500	3700	2600	2,540	na
23	8000 m SE	970	1000	960	977	na	na	na	na	na	na	na
24	5000 m S	1600	2000	1600	1,733	1700	1500	1800	1700	2200	1,780	na
25	7000 m SW	800	950	900	883	na	na	na	na	na	na	na
26	3000 m S	1400	2000	1900	1,767	1800	1700	1200	1400	1500	1,520	na
27	4000 m SW	870	970	960	933	na	na	na	na	na	na	na
28	7500 m W	840	1000	910	917	na	na	na	na	na	na	na
29	5000 m W	na	1100	1200	1,150	990	1100	1000	1200	1500	1,158	na
30	3000 m W	940	1300	1000	1,080	na	na	na	na	na	na	na
31	2000 m W	880	1500	1200	1,193	1100	1000	1000	930	1300	1,066	na
32	1500 m W	800	na	1000	900	na	na	na	na	na	na	na
33	1000 m W	940	2600	2200	1,913	1100	1100	1100	1100	1500	1,180	na
34	1000 m NW	1200	2000	1400	1,533	na	na	na	na	na	na	na
35	500 m N	1300	2100	1700	1,700	1200	1200	1200	1200	1900	1,340	na
36	1000 m NE	830	1000	1000	943	750	920	930	840	970	882	na
37	1500 m N	770	910	na	840	na	na	na	na	na	na	na
38	200 m NW	920	1300	1100	1,107	na	na	na	na	na	na	na
39	2100 m N	na	na	na	na	830	1000	960	920	1200	982	na
40	5000 m NW	930	940	980	950	na	na	na	na	na	na	na
41	5000 m N	890	950	na	920	1400	910	1100	890	1200	1,100	na
57	850 m ESE	na	na	na	na	na	890	na	810	960	887	na
58	800 m SSW	na	na	na	na	na	850	1100	810	1100	965	na
59	1400 m SSW	na	na	na	na	na	920	890	980	1300	1,023	na
60	1100 m SE	na	na	na	na	na	na	770	na	na	770	na
61	2350 m ESE	na	na	na	na	na	850	820	840	1100	903	na
62	15 km NNE	na	na	na	na	na	na	820	790	1100	903	na
	Mean	1100	1657	1536	1413	1160	1074	1111	1145	1488	1165	na

ULN - not established
na - no data available

Table 33: Concentration of manganese (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990	
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	May	June
1	7300 m E	250	300	280	277	na	na	na	na	na	na	na	
2	5000 m E	260	310	280	283	130	110	81	140	84	109	180	210
3	2900 m E	240	310	280	277	na	na	na	na	na	na	na	
4	2000 m E	260	280	280	273	86	110	110	110	120	107	200	240
5	1600 m E	250	290	270	270	na	na	na	na	na	na	na	
6	1000 m E	250	300	na	275	100	110	120	84	68	96	170	230
7	500 m E	260	280	280	273	78	92	73	120	96	92	190	230
8	300 m E	250	270	290	270	na	na	na	na	na	na	na	
9	500 m SE	260	260	260	260	99	110	110	170	100	118	220	220
10	1000 m S	240	230	260	243	na	na	na	na	na	na	na	
11	500 m S	250	310	280	280	76	110	99	110	96	98	180	200
12	250 m SW	250	280	280	270	na	na	na	na	na	na	na	
13	250 m W	260	240	280	260	na	na	na	na	na	na	na	
14	250 m N	250	260	280	263	na	na	na	na	na	na	na	
15	500 m W	250	na	280	265	140	na	120	86	70	104	170	230
16	1000 m SW	240	270	280	263	130	120	130	140	91	122	200	220
17	1600 m SE	260	270	290	273	na	na	na	na	na	na	na	
18	1000 m SE	250	310	280	280	93	100	110	100	na	101	na	
19	1200 m SE	260	300	290	283	na	na	na	na	na	na	na	
20	2000 m SE	250	290	290	277	100	85	130	130	89	107	190	230
21	3000 m SE	240	280	290	270	na	na	na	na	na	na	na	
22	5000 m SE	250	280	260	263	110	86	110	140	110	111	170	240
23	8000 m SE	260	310	270	280	na	na	na	na	na	na	na	
24	5000 m S	250	270	300	273	87	84	130	110	120	106	200	230
25	7000 m SW	260	310	290	287	na	na	na	na	na	na	na	
26	3000 m S	250	290	300	280	100	100	120	99	130	110	200	270
27	4000 m SW	250	300	280	277	na	na	na	na	na	na	na	
28	7500 m W	250	310	280	280	na	na	na	na	na	na	na	
29	5000 m W	na	320	290	305	64	120	80	100	110	95	200	230
30	3000 m W	250	310	280	280	na	na	na	na	na	na	na	
31	2000 m W	260	310	290	287	98	120	120	110	87	107	210	230
32	1500 m W	250	na	280	265	na	na	na	na	na	na	na	
33	1000 m W	260	300	280	280	110	140	99	98	140	117	200	230
34	1000 m NW	260	290	280	277	na	na	na	na	na	na	na	
35	500 m N	260	240	300	267	99	120	80	95	120	103	170	220
36	1000 m NE	260	270	290	273	100	110	120	96	84	102	190	230
37	1500 m N	260	290	na	275	na	na	na	na	na	na	na	
38	200 m NW	260	280	290	277	na	na	na	na	na	na	na	
39	2100 m N	na	na	na	na	120	96	120	82	100	104	220	na
40	5000 m NW	270	270	300	280	na	na	na	na	na	na	na	
41	5000 m N	250	250	na	250	150	96	110	96	110	112	200	220
57	850 m ESE	na	na	na	na	na	110	na	110	110	110	na	
58	800 m SSW	na	na	na	na	na	96	120	71	100	97	200	240
59	1400 m SSW	na	na	na	na	na	76	99	110	64	87	200	220
60	1100 m SE	na	na	na	na	na	na	100	na	na	100	na	
61	2350 m ESE	na	na	na	na	na	95	95	98	96	96	na	
62	15 km NNE	na	na	na	na	na	na	130	130	90	117	na	
	Mean	254	285	283	274	104	104	109	109	99	105	193	229

ULN - not established
na - no data available

Table 34: Concentration of molybdenum (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	
1	7300 m E	0.5	0.5	0.5	0.5	na	na	na	na	na	na	na
2	5000 m E	0.5	0.9	0.5	0.6	0.5	0.5	1.0	0.6	1.4	0.8	na
3	2900 m E	0.5	0.5	0.5	0.5	na	na	na	na	na	na	na
4	2000 m E	0.5	1.2	0.5	0.7	0.5	0.8	0.9	1.1	0.9	0.8	na
5	1600 m E	0.7	0.9	0.5	0.7	na	na	na	na	na	na	na
6	1000 m E	0.5	1.2	na	0.9	0.5	0.5	0.5	0.6	1.0	0.6	na
7	500 m E	0.5	0.7	0.5	0.6	0.5	0.5	0.5	0.5	0.8	0.6	na
8	300 m E	0.7	0.9	0.7	0.8	na	na	na	na	na	na	na
9	500 m SE	0.5	0.7	0.5	0.6	0.5	0.4	0.5	0.5	0.5	0.5	na
10	1000 m S	0.5	0.7	0.5	0.6	na	na	na	na	na	na	na
11	500 m S	0.5	1.1	0.5	0.7	0.5	0.4	0.6	0.5	13.0	3.0	na
12	250 m SW	0.5	1.5	0.5	0.8	na	na	na	na	na	na	na
13	250 m W	0.9	0.5	0.8	0.7	na	na	na	na	na	na	na
14	250 m N	0.5	0.6	0.5	0.5	na	na	na	na	na	na	na
15	500 m W	0.9	na	0.5	0.7	0.5	na	0.6	2.0	0.8	1.0	na
16	1000 m SW	0.5	0.9	0.5	0.6	0.5	1.2	0.8	0.9	0.9	0.9	na
17	1600 m SE	0.5	0.7	0.5	0.6	na	na	na	na	na	na	na
18	1000 m SE	0.5	0.5	0.5	0.5	0.5	0.6	0.8	na	na	0.6	na
19	1200 m SE	0.5	0.5	0.5	0.5	na	na	na	na	na	na	na
20	2000 m SE	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	na
21	3000 m SE	0.5	0.8	0.5	0.6	na	na	na	na	na	na	na
22	5000 m SE	0.7	1.2	0.5	0.8	0.5	0.9	1.1	1.3	0.7	0.9	na
23	8000 m SE	0.5	0.8	0.5	0.6	na	na	na	na	na	na	na
24	5000 m S	0.7	1.1	0.6	0.8	1.0	0.6	1.1	1.0	1.2	1.0	na
25	7000 m SW	0.7	0.5	0.5	0.6	na	na	na	na	na	na	na
26	3000 m S	0.6	2.0	0.6	1.1	0.5	1.3	0.8	0.9	0.5	0.8	na
27	4000 m SW	0.5	0.5	0.5	0.5	na	na	na	na	na	na	na
28	7500 m W	0.5	0.9	0.5	0.6	na	na	na	na	na	na	na
29	5000 m W	na	1.5	0.6	1.1	0.5	0.6	0.6	0.5	0.5	0.5	na
30	3000 m W	0.5	0.8	0.5	0.6	na	na	na	na	na	na	na
31	2000 m W	0.5	0.7	0.5	0.6	0.5	0.6	0.8	0.5	2.2	0.9	na
32	1500 m W	0.5	na	0.5	0.5	na	na	na	na	na	na	na
33	1000 m W	0.5	1.5	0.5	0.8	0.5	0.6	0.6	0.6	0.6	0.6	na
34	1000 m NW	0.5	0.9	0.5	0.6	na	na	na	na	na	na	na
35	500 m N	0.5	0.7	1.1	0.8	0.5	0.8	0.8	0.8	0.5	0.7	na
36	1000 m NE	0.5	0.5	0.6	0.5	0.5	0.9	0.5	0.5	0.6	0.6	na
37	1500 m N	0.5	0.5	na	0.5	na	na	na	na	na	na	na
38	200 m NW	0.6	0.5	0.6	0.6	na	na	na	na	na	na	na
39	2100 m N	na	na	na	na	0.5	0.5	0.6	0.5	0.5	0.5	na
40	5000 m NW	0.5	0.5	0.5	0.5	na	na	na	na	na	na	na
41	5000 m N	0.5	0.5	na	0.5	2.2	0.5	0.5	0.6	0.5	0.9	na
57	850 m ESE	na	na	na	na	na	0.6	na	0.6	0.5	0.6	na
58	800 m SSW	na	na	na	na	na	0.6	0.5	0.5	0.5	0.5	na
59	1400 m SSW	na	na	na	na	na	0.4	0.6	0.6	0.5	0.5	na
60	1100 m SE	na	na	na	na	na	na	0.5	na	na	0.5	na
61	2350 m ESE	na	na	na	na	na	0.6	0.5	0.5	0.5	0.5	na
62	15 km NNE	na	na	na	na	na	na	0.5	0.7	0.5	0.6	na
	Mean	0.6	0.8	0.5	0.6	0.6	0.7	0.7	0.7	1.3	0.8	na

ULN - not established
na - no data available

Table 35: Concentration of nickel (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990	
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	May	June
1	7300 m E	2	3	2	2	na	na	na	na	na	na	na	
2	5000 m E	2	2	2	2	4	4	4	4	3	4	7	11
3	2900 m E	2	3	2	2	na	na	na	na	na	na	na	
4	2000 m E	2	3	2	2	4	4	8	5	5	5	5	**20**
5	1600 m E	2	4	2	3	na	na	na	na	na	na	na	
6	1000 m E	4	5	na	5	7	6	6	6	6	*6	4	11
7	500 m E	4	7	5	5	9	9	6	8	7	8	**18**	**20**
8	300 m E	5	4	6	5	na	na	na	na	na	na	na	
9	500 m SE	3	3	4	3	6	3	4	3	3	4	**27**	**20**
10	1000 m S	2	3	2	2	na	na	na	na	na	na	na	
11	500 m S	2	4	2	3	3	5	6	3	**25**	8	8	9
12	250 m SW	3	4	3	3	na	na	na	na	na	na	na	
13	250 m W	4	2	4	3	na	na	na	na	na	na	na	
14	250 m N	3	3	4	3	na	na	na	na	na	na	na	
15	500 m W	3	na	3	3	6	na	6	4	5	5	7	12
16	1000 m SW	2	3	2	2	4	4	6	4	3	4	13	8
17	1600 m SE	2	2	2	2	na	na	na	na	na	na	na	
18	1000 m SE	2	2	2	2	12	4	4	na	na	7	na	
19	1200 m SE	2	2	2	2	na	na	na	na	na	na	na	
20	2000 m SE	2	2	2	2	1	3	4	5	4	3	10	**17**
21	3000 m SE	2	2	2	2	na	na	na	na	na	na	na	
22	5000 m SE	2	2	2	2	4	4	4	3	3	4	9	12
23	8000 m SE	2	2	2	2	na	na	na	na	na	na	na	
24	5000 m S	3	3	3	3	4	4	6	4	4	4	4	**14**
25	7000 m SW	1	2	2	2	na	na	na	na	na	na	na	
26	3000 m S	2	3	3	3	11	4	6	4	4	6	5	**18**
27	4000 m SW	1	2	2	2	na	na	na	na	na	na	na	
28	7500 m W	2	2	2	2	na	na	na	na	na	na	na	
29	5000 m W	na	2	2	2	6	3	3	5	3	4	**16**	8
30	3000 m W	2	3	2	2	na	na	na	na	na	na	na	
31	2000 m W	2	2	2	2	6	3	4	4	6	5	5	10
32	1500 m W	2	na	2	2	na	na	na	na	na	na	na	
33	1000 m W	2	3	3	3	4	4	4	5	4	4	5	13
34	1000 m NW	2	3	4	3	na	na	na	na	na	na	na	
35	500 m N	7	11	**24**	**14**	10	13	11	**19**	**14**	13	**22**	**31**
36	1000 m NE	2	3	3	3	4	6	5	4	3	4	8	10
37	1500 m N	2	2	na	2	na	na	na	na	na	na	na	
38	200 m NW	2	2	2	2	na	na	na	na	na	na	na	
39	2100 m N	na	na	na	na	6	3	5	4	4	4	5	na
40	5000 m NW	2	2	2	2	na	na	na	na	na	na	na	
41	5000 m N	2	3	na	3	9	3	8	4	5	6	**17**	**16**
57	850 m ESE	na	na	na	na	na	4	na	4	3	4	na	
58	800 m SSW	na	na	na	na	na	4	4	3	5	4	8	9
59	1400 m SSW	na	na	na	na	na	3	3	3	3	3	8	5
60	1100 m SE	na	na	na	na	na	na	3	na	na	3	na	
61	2350 m ESE	na	na	na	na	na	6	3	3	3	4	na	
62	15 km NNE	na	na	na	na	na	na	3	4	3	3	na	
	Mean	2	3	3	3	6	5	5	5	5	5	10	**14**

ULN = 13
na = no data available

Table 36: Concentration of selenium (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	
1	7300 m E	0.11	0.43	0.45	0.33	na	na	na	na	na	na	na
2	5000 m E	0.45	0.50	0.45	0.47	0.44	0.54	0.53	0.03	na	0.39	na
3	2900 m E	0.28	0.36	0.36	0.33	na	na	na	na	na	na	na
4	2000 m E	0.45	0.43	0.45	0.44	0.34	0.51	0.63	0.03	0.27	0.36	na
5	1600 m E	0.37	0.50	0.45	0.44	na	na	na	na	na	na	na
6	1000 m E	0.28	0.30	na	0.29	0.35	0.46	0.47	0.07	0.50	0.37	na
7	500 m E	0.37	0.30	0.27	0.31	0.39	0.46	0.48	0.03	0.44	0.36	na
8	300 m E	0.37	0.30	0.27	0.31	na	na	na	na	na	na	na
9	500 m SE	0.28	na	0.27	0.28	0.35	0.46	0.47	0.03	na	0.33	na
10	1000 m S	0.37	na	0.27	0.32	na	na	na	na	na	na	na
11	500 m S	0.45	0.30	0.27	0.34	0.28	0.44	0.32	0.03	na	0.27	na
12	250 m SW	0.37	0.36	0.27	0.33	na	na	na	na	na	na	na
13	250 m W	0.28	0.50	0.19	0.32	na	na	na	na	na	na	na
14	250 m N	0.37	0.50	0.27	0.38	na	na	na	na	na	na	na
15	500 m W	0.28	na	0.19	0.24	0.37	na	0.33	na	0.58	0.43	na
16	1000 m SW	0.37	0.50	0.36	0.41	0.37	0.44	0.39	0.25	0.38	0.37	na
17	1600 m SE	0.20	0.43	0.27	0.30	na	na	na	na	na	na	na
18	1000 m SE	0.20	0.43	0.27	0.30	0.35	0.44	0.38	na	na	0.39	na
19	1200 m SE	0.20	0.43	0.19	0.27	na	na	na	na	na	na	na
20	2000 m SE	0.33	0.43	0.27	0.34	0.43	0.51	0.33	0.03	0.47	0.35	na
21	3000 m SE	0.37	0.43	0.45	0.42	na	na	na	na	na	na	na
22	5000 m SE	0.45	0.36	0.36	0.39	0.43	0.33	0.42	0.03	0.43	0.33	na
23	8000 m SE	0.37	0.36	0.36	0.36	na	na	na	na	na	na	na
24	5000 m S	0.45	0.30	0.27	0.34	0.47	0.30	0.43	0.39	0.41	0.40	na
25	7000 m SW	0.28	0.30	0.45	0.34	na	na	na	na	na	na	na
26	3000 m S	0.37	0.36	0.45	0.39	0.39	0.35	0.41	na	na	0.38	na
27	4000 m SW	0.37	0.23	0.45	0.35	na	na	na	na	na	na	na
28	7500 m W	0.28	0.23	0.27	0.26	na	na	na	na	na	na	na
29	5000 m W	na	0.30	0.27	0.29	0.39	0.35	0.41	0.24	0.32	0.34	na
30	3000 m W	0.45	0.36	0.27	0.36	na	na	na	na	na	na	na
31	2000 m W	0.45	0.36	0.27	0.36	0.41	0.38	0.34	0.31	na	0.36	na
32	1500 m W	0.28	na	0.27	0.28	na	na	na	na	na	na	na
33	1000 m W	0.28	0.36	0.45	0.36	0.43	0.33	0.46	0.39	0.51	0.42	na
34	1000 m NW	0.28	0.43	0.36	0.36	na	na	na	na	na	na	na
35	500 m N	0.28	0.45	0.53	0.42	0.41	0.33	0.37	0.43	0.40	0.39	na
36	1000 m NE	0.28	0.43	0.45	0.39	0.35	0.30	0.42	0.42	na	0.37	na
37	1500 m N	0.28	0.30	na	0.29	na	na	na	na	na	na	na
38	200 m NW	0.37	0.30	0.36	0.34	na	na	na	na	na	na	na
39	2100 m N	na	na	na	na	0.33	0.38	0.31	0.24	0.31	0.31	na
40	5000 m NW	0.28	0.15	0.36	0.26	na	na	na	na	na	na	na
41	5000 m N	0.37	0.10	na	0.24	0.54	0.40	0.43	0.31	na	0.42	na
57	850 m ESE	na	na	na	na	na	0.33	na	0.39	0.37	0.36	na
58	800 m SSW	na	na	na	na	na	0.40	0.43	0.43	0.38	0.41	na
59	1400 m SSW	na	na	na	na	na	0.38	0.32	0.42	0.43	0.39	na
60	1100 m SE	na	na	na	na	na	na	0.35	na	na	0.35	na
61	2350 m ESE	na	na	na	na	na	0.38	0.31	0.31	0.48	0.37	na
62	15 km NNE	na	na	na	na	na	na	0.37	0.43	0.43	0.41	na
	Mean	0.33	0.36	0.34	0.34	0.39	0.40	0.40	0.24	0.42	0.37	na

ULN - not established
na - no data available

Table 37 : Concentration of sodium (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990	
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	May	June
1	7300 m E	28	27	64	40	na	na	na	na	na	na	na	
2	5000 m E	44	28	83	52	110	59	130	60	52	82	39	50
3	2900 m E	50	27	76	51	na	na	na	na	na	na	na	
4	2000 m E	48	25	96	56	140	68	160	63	110	108	72	85
5	1600 m E	52	22	82	52	na	na	na	na	na	na	na	
6	1000 m E	45	22	na	34	100	93	230	82	81	117	170	340
7	500 m E	45	28	83	52	140	67	230	160	98	139	210	180
8	300 m E	88	56	190	111	na	na	na	na	na	na	na	
9	500 m SE	64	18	100	61	130	83	200	96	39	110	99	88
10	1000 m S	46	13	48	36	na	na	na	na	na	na	na	
11	500 m S	54	30	78	54	130	60	190	74	45	100	82	67
12	250 m SW	53	110	85	83	na	na	na	na	na	na	na	
13	250 m W	110	17	130	86	na	na	na	na	na	na	na	
14	250 m N	87	27	110	75	na	na	na	na	na	na	na	
15	500 m W	89	na	100	95	90	na	130	83	70	93	37	61
16	1000 m SW	58	31	110	66	170	62	230	110	93	133	99	120
17	1600 m SE	57	20	77	51	na	na	na	na	na	na	na	
18	1000 m SE	45	20	59	41	140	64	200	na	na	135	na	
19	1200 m SE	92	57	66	72	na	na	na	na	na	na	na	
20	2000 m SE	76	20	80	59	180	72	200	140	71	133	120	98
21	3000 m SE	56	21	81	53	na	na	na	na	na	na	na	
22	5000 m SE	350	68	180	199	320	89	210	91	160	174	180	240
23	8000 m SE	67	27	68	54	na	na	na	na	na	na	na	
24	5000 m S	150	37	140	109	180	83	200	200	140	161	110	150
25	7000 m SW	60	19	65	48	na	na	na	na	na	na	na	
26	3000 m S	76	38	120	78	240	66	160	86	87	128	370	320
27	4000 m SW	60	19	75	51	na	na	na	na	na	na	na	
28	7500 m W	36	17	72	42	na	na	na	na	na	na	na	
29	5000 m W	na	28	98	63	160	70	220	57	94	120	110	290
30	3000 m W	48	25	75	49	na	na	na	na	na	na	na	
31	2000 m W	50	31	74	52	170	110	220	170	130	160	320	260
32	1500 m W	47	na	65	56	na	na	na	na	na	na	na	
33	1000 m W	51	24	98	58	170	88	230	130	120	148	78	140
34	1000 m NW	63	26	85	58	na	na	na	na	na	na	na	
35	500 m N	110	26	150	95	120	58	230	120	74	120	97	54
36	1000 m NE	51	23	82	52	130	110	230	97	69	127	38	62
37	1500 m N	50	24	na	37	na	na	na	na	na	na	na	
38	200 m NW	53	28	73	51	na	na	na	na	na	na	na	
39	2100 m N	na	na	na	na	150	77	200	87	72	117	160	na
40	5000 m NW	42	20	63	42	na	na	na	na	na	na	na	
41	5000 m N	22	23	na	23	110	89	210	46	57	102	120	62
57	850 m ESE	na	na	na	na	na	190	na	180	130	167	na	
58	800 m SSW	na	na	na	na	na	150	230	160	220	190	210	240
59	1400 m SSW	na	na	na	na	na	74	110	52	40	69	220	190
60	1100 m SE	na	na	na	na	na	na	160	na	na	160	na	
61	2350 m ESE	na	na	na	na	na	72	160	81	120	108	na	
62	15 km NNE	na	na	na	na	na	na	160	140	99	133	na	
	Mean	67	30	89	62	154	85	193	107	95	128	140	150

ULN - not established
na - no data available

Table 38 : Concentration of sulphur (% dry wt.) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	
1	7300 m E	0.06	0.06	na	0.06	na	na	na	na	na	na	na
2	5000 m E	0.07	0.06	0.15	0.09	0.08	0.07	0.09	0.08	0.10	0.08	na
3	2900 m E	0.08	0.06	0.13	0.09	na	na	na	na	na	na	na
4	2000 m E	0.11	0.07	0.15	0.11	0.09	0.08	0.09	0.08	0.21	0.11	na
5	1600 m E	0.09	0.06	0.14	0.10	na	na	na	na	na	na	na
6	1000 m E	0.08	na	na	0.08	0.09	0.07	0.12	0.08	0.06	0.08	na
7	500 m E	0.08	0.08	0.13	0.10	0.08	0.06	0.10	0.08	0.02	0.07	na
8	300 m E	0.12	0.10	0.35	0.19	na	na	na	na	na	na	na
9	500 m SE	0.11	0.05	0.16	0.11	0.10	0.07	0.10	0.07	0.01	0.07	na
10	1000 m S	0.09	0.06	0.11	0.09	na	na	na	na	na	na	na
11	500 m S	0.10	0.07	0.16	0.11	0.08	0.07	0.09	0.07	0.01	0.06	na
12	250 m SW	0.10	0.13	na	0.12	na	na	na	na	na	na	na
13	250 m W	0.13	0.06	na	0.10	na	na	na	na	na	na	na
14	250 m N	0.10	0.07	0.10	0.09	na	na	na	na	na	na	na
15	500 m W	0.10	na	0.26	0.18	0.08	na	0.09	0.07	0.10	0.09	na
16	1000 m SW	0.08	0.08	na	0.08	0.11	0.08	0.13	0.10	0.01	0.09	na
17	1600 m SE	0.08	0.06	na	0.07	na	na	na	na	na	na	na
18	1000 m SE	0.08	0.05	0.09	0.07	0.08	0.06	0.09	na	na	0.08	na
19	1200 m SE	0.08	0.08	0.12	0.09	na	na	na	na	na	na	na
20	2000 m SE	0.08	0.06	0.14	0.09	0.09	0.07	0.11	0.08	0.04	0.08	na
21	3000 m SE	0.09	na	0.14	0.12	na	na	na	na	na	na	na
22	5000 m SE	0.13	0.09	0.21	0.14	0.10	0.08	0.10	0.10	0.13	0.10	na
23	8000 m SE	0.09	0.06	0.15	0.10	na	na	na	na	na	na	na
24	5000 m S	0.13	0.08	0.18	0.13	0.12	0.08	0.09	0.11	0.16	0.11	na
25	7000 m SW	0.07	0.05	0.12	0.08	na	na	na	na	na	na	na
26	3000 m S	0.09	0.07	na	0.08	0.13	0.09	0.10	0.09	0.12	0.11	na
27	4000 m SW	0.07	0.07	0.13	0.09	na	na	na	na	na	na	na
28	7500 m W	0.06	0.06	na	0.06	na	na	na	na	na	na	na
29	5000 m W	na	0.07	0.17	0.12	0.08	0.07	0.10	0.08	0.10	0.09	na
30	3000 m W	0.08	0.05	0.11	0.08	na	na	na	na	na	na	na
31	2000 m W	0.07	0.08	0.13	0.09	0.09	0.08	0.11	0.03	0.11	0.08	na
32	1500 m W	0.07	na	na	0.07	na	na	na	na	na	na	na
33	1000 m W	0.08	0.07	na	0.08	0.09	0.08	0.11	0.03	0.12	0.09	na
34	1000 m NW	0.10	0.07	0.13	0.10	na	na	na	na	na	na	na
35	500 m N	0.10	0.09	0.17	0.12	0.08	0.08	0.09	0.09	0.12	0.09	na
36	1000 m NE	0.08	0.06	0.12	0.09	0.09	0.08	0.11	0.08	0.07	0.09	na
37	1500 m N	0.07	0.06	na	0.07	na	na	na	na	na	na	na
38	200 m NW	0.07	0.06	0.11	0.08	na	na	na	na	na	na	na
39	2100 m N	na	na	na	na	0.09	0.07	0.09	0.06	0.08	0.08	na
40	5000 m NW	0.07	0.03	0.11	0.07	na	na	na	na	na	na	na
41	5000 m N	0.06	0.06	na	0.06	0.09	0.07	0.11	0.06	0.08	0.08	na
57	850 m ESE	na	na	na	na	na	0.06	na	0.08	0.09	0.08	na
58	800 m SSW	na	na	na	na	na	0.09	0.10	0.08	0.08	0.09	na
59	1400 m SSW	na	na	na	na	na	0.07	0.10	0.07	0.08	0.08	na
60	1100 m SE	na	na	na	na	na	na	0.09	na	na	0.09	na
61	2 2350 m ESE	na	na	na	na	na	0.07	0.07	0.08	0.09	0.08	na
62	15 km NNE	na	na	na	na	na	na	0.08	0.07	0.08	0.08	na
	Mean	0.09	0.07	0.15	0.10	0.09	0.07	0.10	0.08	0.09	0.09	na

ULN - not established
na - no data available

Table 39: Concentration of vanadium (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990	
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	May	June
1	7300 m E	2	3	3	3	na	na	na	na	na	na	na	
2	5000 m E	2	3	3	3	6	7	7	6	5	6	8	6
3	2900 m E	2	1	3	2	na	na	na	na	na	na	na	
4	2000 m E	3	3	3	3	6	7	6	6	6	6	8	6
5	1600 m E	2	3	3	3	na	na	na	na	na	na	na	
6	1000 m E	2	3	na	3	6	6	6	6	4	6	6	5
7	500 m E	2	4	3	3	6	7	5	5	5	6	6	6
8	300 m E	3	4	5	4	na	na	na	na	na	na	na	
9	500 m SE	2	3	5	3	6	6	5	5	4	5	6	5
10	1000 m S	2	3	3	3	na	na	na	na	na	na	na	
11	500 m S	2	3	3	3	6	5	5	5	25	9	5	5
12	250 m SW	3	4	3	3	na	na	na	na	na	na	na	
13	250 m W	4	3	5	4	na	na	na	na	na	na	na	
14	250 m N	3	3	4	3	na	na	na	na	na	na	na	
15	500 m W	3	na	3	3	6	na	6	6	5	6	9	6
16	1000 m SW	2	3	3	3	7	6	5	6	5	6	7	6
17	1600 m SE	2	3	2	2	na	na	na	na	na	na	na	
18	1000 m SE	2	3	2	2	5	6	6	na	na	6	na	
19	1200 m SE	2	3	2	2	na	na	na	na	na	na	na	
20	2000 m SE	2	3	2	2	4	7	6	7	5	6	6	5
21	3000 m SE	3	3	3	3	na	na	na	na	na	na	na	
22	5000 m SE	3	4	3	3	6	7	6	6	5	6	6	6
23	8000 m SE	3	3	3	3	na	na	na	na	na	na	na	
24	5000 m S	3	4	3	3	7	6	6	6	6	6	6	6
25	7000 m SW	2	2	2	2	na	na	na	na	na	na	na	
26	3000 m S	3	4	4	4	7	8	7	4	5	6	7	3
27	4000 m SW	2	2	3	2	na	na	na	na	na	na	na	
28	7500 m W	2	3	2	2	na	na	na	na	na	na	na	
29	5000 m W	na	3	3	3	7	6	5	6	5	6	6	6
30	3000 m W	2	3	3	3	na	na	na	na	na	na	na	
31	2000 m W	2	3	3	3	6	6	6	5	7	6	6	5
32	1500 m W	2	na	2	2	na	na	na	na	na	na	na	
33	1000 m W	2	3	3	3	6	6	5	6	6	6	7	6
34	1000 m NW	2	3	3	3	na	na	na	na	na	na	na	
35	500 m N	3	3	3	3	6	6	5	5	4	5	6	6
36	1000 m NE	2	2	3	2	6	6	6	6	5	6	6	5
37	1500 m N	2	2	na	2	na	na	na	na	na	na	na	
38	200 m NW	2	3	3	3	na	na	na	na	na	na	na	
39	2100 m N	na	na	na	na	6	6	6	5	5	6	8	na
40	5000 m NW	2	2	3	2	na	na	na	na	na	na	na	
41	5000 m N	2	3	na	3	8	6	5	6	5	6	6	5
57	850 m ESE	na	na	na	na	na	7	na	6	6	6	na	
58	800 m SSW	na	na	na	na	na	6	5	6	5	6	5	5
59	1400 m SSW	na	na	na	na	na	7	5	7	6	6	6	5
60	1100 m SE	na	na	na	na	na	na	5	na	na	5	na	
61	2350 m ESE	na	na	na	na	na	5	5	6	5	5	na	
62	15 km NNE	na	na	na	na	na	na	5	6	5	5	na	
	Mean	2	3	3	3	6	6	6	6	6	6	6	5

ULN - not established
na - no data available

Table 40: Concentration of zinc (ug/g) in moss bags collected in the vicinity of Victoria Hospital, London.

		1984				1986						1990	
Site	Location	Aug	Sept	Oct	Mean	June	July	Aug	Sept	Oct	Mean	May	June
1	7300 m E	100	200	44	115	na	na	na	na	na	na	na	
2	5000 m E	37	51	37	42	47	58	51	57	61	55	54	50
3	2900 m E	35	50	40	42	na	na	na	na	na	na	na	
4	2000 m E	38	120	59	72	62	59	68	69	73	66	65	63
5	1600 m E	69	68	66	68	na	na	na	na	na	na	na	
6	1000 m E	58	71	na	65	56	58	68	63	71	63	130	110
7	500 m E	66	94	88	83	110	87	75	110	86	94	110	130
8	300 m E	110	180	110	133	na	na	na	na	na	na	na	
9	500 m SE	24	34	58	39	51	52	48	44	76	54	50	42
10	1000 m S	24	34	28	29	na	na	na	na	na	na	na	
11	500 m S	37	110	31	59	65	48	49	46	83	58	35	39
12	250 m SW	69	170	48	96	na	na	na	na	na	na	na	
13	250 m W	59	60	87	69	na	na	na	na	na	na	na	
14	250 m N	96	150	54	100	na	na	na	na	na	na	na	
15	500 m W	36	na	63	50	70	na	88	71	88	79	74	73
16	1000 m SW	64	91	62	72	68	73	69	67	72	70	75	72
17	1600 m SE	58	140	200	133	na	na	na	na	na	na	na	
18	1000 m SE	23	34	27	28	54	41	56	na	na	50	na	
19	1200 m SE	22	29	29	27	na	na	na	na	na	na	na	
20	2000 m SE	37	59	35	44	56	58	45	63	71	59	47	52
21	3000 m SE	220	650	600	490	na	na	na	na	na	na	na	
22	5000 m SE	33	42	37	37	55	48	50	55	54	52	200	50
23	8000 m SE	37	76	140	84	na	na	na	na	na	na	na	
24	5000 m S	87	220	68	125	100	110	90	91	120	102	59	83
25	7000 m SW	28	39	30	32	na	na	na	na	na	na	na	
26	3000 m S	57	85	60	67	80	130	66	110	82	94	79	92
27	4000 m SW	32	40	39	37	na	na	na	na	na	na	na	
28	7500 m W	160	270	120	183	na	na	na	na	na	na	na	
29	5000 m W	na	400	400	400	270	290	180	490	250	296	560	170
30	3000 m W	36	45	39	40	na	na	na	na	na	na	na	
31	2000 m W	70	120	88	93	94	100	66	130	92	96	85	76
32	1500 m W	61	na	77	69	na	na	na	na	na	na	na	
33	1000 m W	45	84	81	70	53	59	64	72	76	65	77	51
34	1000 m NW	65	170	86	107	na	na	na	na	na	na	na	
35	500 m N	230	690	820	580	410	560	140	550	370	406	430	310
36	1000 m NE	150	160	120	143	120	150	84	130	120	121	230	120
37	1500 m N	110	220	na	165	na	na	na	na	na	na	na	
38	200 m NW	120	120	330	190	na	na	na	na	na	na	na	
39	2100 m N	na	na	na	na	150	99	68	80	130	105	72	na
40	5000 m NW	72	89	69	77	na	na	na	na	na	na	na	
41	5000 m N	63	140	na	102	83	69	85	89	110	87	12	170
57	850 m ESE	na	na	na	na	na	43	na	64	43	50	na	
58	800 m SSW	na	na	na	na	na	46	47	48	54	49	39	36
59	1400 m SSW	na	na	na	na	na	49	38	49	43	45	39	37
60	1100 m SE	na	na	na	na	na	na	49	na	na	49	na	
61	2350 m ESE	na	na	na	na	na	52	45	65	51	53	na	
62	15 km NNE	na	na	na	na	na	na	46	41	65	51	na	
	Mean	70	142	118	111	103	102	69	111	98	91	120	91

ULN = 800
na = no data available

Table 41: Concentration of metals in moss bags collected in the vicinity of Victoria Hospital, London.

Site	Location	1990							
		Al (ug/g)		Co (ug/g)		Mg (ug/g)		Sr (ug/g)	
		May	June	May	June	May	June	May	June
1	7300 m E	na	na	na	na	na	na	na	na
2	5000 m E	2300	1000	1.1	1	0.11	0.23	14.0	12.0
3	2900 m E	na	na	na	na	na	na	na	na
4	2000 m E	2000	1100	1.1	1	0.28	0.31	16.0	13.0
5	1600 m E	na	na	na	na	na	na	na	na
6	1000 m E	1000	850	0.6	0.7	0.20	0.20	12.0	9.9
7	500 m E	1200	1100	0.6	0.8	0.17	0.24	11.0	11.0
8	300 m E	na	na	na	na	na	na	na	na
9	500 m SE	1100	720	0.6	0.7	0.11	0.05	11.0	8.9
10	1000 m S	na	na	na	na	na	na	na	na
11	500 m S	2400	820	0.5	0.9	0.20	0.20	9.5	9.3
12	250 m SW	na	na	na	na	na	na	na	na
13	250 m W	na	na	na	na	na	na	na	na
14	250 m N	na	na	na	na	na	na	na	na
15	500 m W	1600	940	1.1	0.9	0.23	0.18	15.0	12.0
16	1000 m SW	1300	1000	0.8	0.9	0.18	0.19	15.0	15.0
17	1600 m SE	na	na	na	na	na	na	na	na
18	1000 m SE	na	na	na	na	na	na	na	na
19	1200 m SE	na	na	na	na	na	na	na	na
20	2000 m SE	1200	910	0.6	0.7	0.22	0.37	15.0	11.0
21	3000 m SE	na	na	na	na	na	na	na	na
22	5000 m SE	1200	1100	0.6	1.0	0.30	0.09	17.0	19.0
23	8000 m SE	na	na	na	na	na	na	na	na
24	5000 m S	1600	1100	0.7	1.2	0.26	0.08	14.0	17.0
25	7000 m SW	na	na	na	na	na	na	na	na
26	3000 m S	1500	780	0.9	0.9	0.17	0.06	17.0	19.0
27	4000 m SW	na	na	na	na	na	na	na	na
28	7500 m W	na	na	na	na	na	na	na	na
29	5000 m W	1300	1000	0.6	0.7	0.22	0.12	12.0	13.0
30	3000 m W	na	na	na	na	na	na	na	na
31	2000 m W	1700	880	0.6	0.8	0.12	0.02	14.0	11.0
32	1500 m W	na	na	na	na	na	na	na	na
33	1000 m W	1400	1400	0.7	1.2	0.13	0.15	12.0	14.0
34	1000 m NW	na	na	na	na	na	na	na	na
35	500 m N	1200	1100	0.8	1.2	0.29	0.40	15.0	15.0
36	1000 m NE	1900	760	0.6	0.5	0.19	0.20	10.0	7.8
37	1500 m N	na	na	na	na	na	na	na	na
38	200 m NW	na	na	na	na	na	na	na	na
39	2100 m N	1100	na	1.2	na	0.27	na	16.0	na
40	5000 m NW	na	na	na	na	na	na	na	na
41	5000 m N	1100	810	0.7	0.6	0.21	0.22	13.0	10.0
57	850 m ESE	na	na	na	na	na	na	na	na
58	800 m SSW	1400	790	0.5	0.7	0.20	0.07	11.0	8.8
59	1400 m SSW	1000	850	0.6	0.6	0.18	0.04	11.0	9.2
60	1100 m SE	na	na	na	na	na	na	na	na
61	2350 m ESE	na	na	na	na	na	na	na	na
62	15 km NNE	na	na	na	na	na	na	na	na
Mean		1452	950	0.7	1.2	0.20	0.17	13.4	12.3
ULN		NE		6		NE		NE	

NE - ULN not established
na - no data available
Note: Values in bold indicate measurable trace amount, interpret with caution. As a result not included in mean.

Table 42 : Herbaceous Community Data, Victoria Hospital Study, London 1986

Location	Plot	Species	No. Plants	% Cover
2	2	Black Cherry	1	1
2	3	Black Cherry	1	2
2	4	Black Cherry	2	5
2	6	Black Cherry	4	5
2	7	Black Cherry	5	20
2	8	Black Cherry	1	2
2	13	Black Cherry	1	1
2	17	Black Cherry	2	5
2	18	Black Cherry	3	5
2	19	Black Cherry	1	1
2	22	Black Cherry	1	1
2	23	Black Cherry	6	10
		SUM	28	58
2	2	Euonymus	1	5
2	5	Euonymus	1	2
2	6	Euonymus	2	10
		SUM	4	17
2	2	Helleborine	1	1
2	8	Helleborine	1	2
2	12	Helleborine	1	1
		SUM	3	4
2	22	Hickory	1	1
		SUM	1	1
2	2	Mulberry	1	5
		SUM	1	5
2	9	Nil	0	
2	9	Nil	0	
2	16	Nil	0	
		SUM	0	
2	21	Red Oak	1	5
		SUM	1	5
2	11	Sugar Maple	1	1
2	20	Sugar Maple	1	30
2	22	Sugar Maple	2	1
		SUM	4	32
2	15	Waterleaf	4	40
		SUM	4	40
2	1	White Ash	2	5
2	2	White Ash	1	2
2	4	White Ash	2	10
2	6	White Ash	6	35
2	7	White Ash	6	35
2	11	White Ash	1	5
2	12	White Ash	3	50
2	13	White Ash	6	70
2	14	White Ash	3	5
2	17	White Ash	1	5

Table 42 (cont'): Herbaceous Community Data, Victoria Hospital Study, London 1986

Location	Plot	Species	No. Plants	% Cover
2	18	White Ash	5	40
2	21	White Ash	5	10
2	22	White Ash	1	5
2	23	White Ash	6	40
2	24	White Ash	8	80
2	25	White Ash	8	50
		SUM	64	447

Table 42 (cont'): Herbaceous Community Data, Victoria Hospital Study, London 1986

Location	Plot	Species	No. Plants	% Cover
3	2	Black Cherry	2	2
3	6	Black Cherry	2	10
3	9	Black Cherry	1	3
3	13	Black Cherry	2	40
3	15	Black Cherry	1	1
3	16	Black Cherry	2	1
3	20	Black Cherry	1	5
		SUM	11	62
3	10	Buckthorn	1	1
		SUM	1	1
3	4	Ironwood	1	1
		SUM	1	1
3	5	Large-leaved Aster	3	4
3	11	Large-leaved Aster	3	10
		SUM	6	14
3	8	May Apple	2	20
		SUM	2	20
3	3	Nil	0	
3	7	Nil	0	
3	19	Nil	0	
3	22	Nil	0	
3	23	Nil	0	
		SUM	0	
3	5	Strawberry	4	10
		SUM	4	10
3	5	Sugar Maple	1	1
3	10	Sugar Maple	1	1
3	15	Sugar Maple	2	5
3	16	Sugar Maple	2	30
3	17	Sugar Maple	1	3
3	18	Sugar Maple	1	1
3	21	Sugar maple	2	10
3	24	Sugar Maple	1	5
3	25	Sugar Maple	9	90
		SUM	20	146
3	1	White Ash	6	80
3	5	White Ash	3	20
3	6	White Ash	3	20
3	12	White Ash	1	1
3	14	White Ash	1	5
3	16	White Ash	1	1
3	21	White Ash	1	10
3	25	White Ash	1	10
		SUM	17	147

Table 42 (cont'): Herbaceous Community Data, Victoria Hospital Study, London 1986

Location	Plot	Species	No. Plants	% Cover
6	1	Black Cherry	1	1
6	3	Black Cherry	1	1
6	5	Black Cherry	1	1
6	6	Black Cherry	4	10
6	8	Black Cherry	2	1
6	9	Black Cherry	1	5
6	10	Black Cherry	1	1
6	13	Black Cherry	1	1
6	16	Black Cherry	3	5
6	25	Black Cherry	3	10
		SUM	18	36
6	5	Buckthorn	3	10
6	9	Buckthorn	1	1
6	10	Buckthorn	3	5
6	18	Buckthorn	1	5
		SUM	8	21
6	14	Manitoba Maple	1	5
6	20	Manitoba Maple	1	5
		SUM	2	10
6	25	May Apple	3	20
		SUM	3	20
6	11	Nil	0	
6	12	Nil	0	
6	15	Nil	0	
6	17	Nil	0	
6	19	Nil	0	
6	21	Nil	0	
6	23	Nil	0	
		SUM	0	
6	6	Sugar maple	1	20
6	7	Sugar Maple	2	5
6	8	Sugar Maple	2	5
		SUM	5	30
6	1	Violet	5	20
		SUM	5	20
6	1	Virginia Creeper	2	1
6	2	Virginia Creeper	13	50
6	6	Virginia Creeper	1	1
6	7	Virginia Creeper	1	1
6	16	Virginia Creeper	1	1
6	22	Virginia Creeper	2	5
		SUM	20	59
6	4	White Ash	5	60
6	8	White Ash	1	1
6	9	White Ash	5	60
6	10	White Ash	1	1
6	13	White Ash	2	10
6	18	White Ash	2	15
6	20	White Ash	1	1
6	22	White Ash	2	20
6	24	White Ash	1	1

Table 42 (cont'): Herbaceous Community Data, Victoria Hospital Study, London 1986

Location	Plot	Species	No. Plants	% Cover
6	25	White Ash	2	5
		SUM	22	174

Table 42 (cont'): Herbaceous Community Data, Victoria Hospital Study, London 1986

Location	Plot	Species	No. Plants	% Cover
7	5	Benzoin	1	2
		SUM	1	2
7	1	Black Cherry	3	5
7	2	Black Cherry	2	5
7	4	Black Cherry	2	5
7	5	Black Cherry	4	5
7	7	Black Cherry	1	1
7	8	Black Cherry	2	2
7	9	Black Cherry	3	2
7	10	Black Cherry	1	1
7	12	Black Cherry	3	1
7	13	Black Cherry	1	1
7	14	Black Cherry	2	5
7	15	Black Cherry	1	1
7	17	Black Cherry	1	2
7	18	Black Cherry	8	10
7	19	Black Cherry	4	5
7	20	Black Cherry	4	5
7	23	Black Cherry	14	10
7	24	Black Cherry	3	5
7	25	Black cherry	4	5
		SUM	63	76
7	10	Cat Briar	1	1
		SUM	1	1
7	14	Enchanter's Nightshade	1	1
7	17	Enchanter's Nightshade	1	2
		SUM	2	3
7	4	Euonymus	2	1
		SUM	2	1
7	9	Grass	2	5
		SUM	2	5
7	8	Hawthorn	1	10
7	20	Hawthorn	1	2
		SUM	2	12
7	21	Helleborine	1	1
		SUM	1	1
7	25	Hickory	1	15
		SUM	1	15
7	2	Honeysuckle	5	10
7	4	Honeysuckle	6	25
		SUM	11	35
7	21	Ironwood	4	10
		SUM	4	10
7	18	Jack-in-the-pulpit	11	10
7	24	Jack-in-the-pulpit	1	1
		SUM	12	11
7	6	Nil	0	
7	22	Nil	0	
		SUM	0	
7	10	Polytrichum moss		5
		SUM		5

Table 42 (cont'): Herbaceous Community Data, Victoria Hospital Study, London 1986

Location	Plot	Species	No. Plants	% Cover
7	4	Solomon's Seal	1	5
		SUM	1	5
7	2	Sugar Maple	1	15
7	3	Sugar Maple	3	20
7	5	Sugar Maple	1	2
7	8	Sugar maple	1	15
7	9	Sugar Maple	1	5
		SUM	7	57
7	16	Virginia Waterleaf	11	15
		SUM	11	15
7	4	White Ash	2	5
7	5	White Ash	2	5
7	11	White Ash	1	2
7	12	White Ash	3	2
7	13	White Ash	1	1
7	14	White Ash	5	15
7	18	White Ash	2	5
7	19	White Ash	2	5
7	20	White Ash	3	5
7	24	White Ash	3	5
7	25	White Ash	4	10
		SUM	28	60

Table 42 (cont'): Herbaceous Community Data, Victoria Hospital Study, London 1986

Location	Plot	Species	No. Plants	% Cover
11	6	Black Cherry	1	5
11	7	Black Cherry	1	1
11	10	Black Cherry	1	2
11	16	Black Cherry	2	1
11	20	Black Cherry	1	2
11	21	Black Cherry	5	5
11	23	Black Cherry	3	5
		SUM	14	21
11	17	Enchanter's Nightshade	4	5
11	22	Enchanter's Nightshade	1	5
		SUM	5	10
11	14	Euonymus	7	15
11	22	Euonymus	9	10
11	25	Euonymus	2	5
		SUM	18	30
11	1	False Solomon's Seal	1	15
11	2	False Solomon's Seal	3	20
11	7	False Solomon's Seal	1	10
11	8	False Solomon's Seal	1	1
11	11	False Solomon's Seal	6	35
11	15	False Solomon's Seal	1	1
11	24	False Solomon's Seal	2	5
		SUM	15	87
11	9	Fly Honeysuckle	3	10
		SUM	3	10
11	18	Helleborine	2	1
		SUM	2	1
11	4	Honeysuckle	1	5
		SUM	1	5
11	8	Jack-in-the-pulpit	1	1
11	10	Jack-in-the-pulpit	2	5
11	15	Jack-in-the-pulpit	3	5
		SUM	6	11
11	25	Jewelweed	4	5
		SUM	4	5
11	5	Nil	0	
11	12	Nil	0	
11	13	Nil	0	
11	19	Nil	0	
		SUM	0	
11	22	Poison Ivy	1	2
11	24	Poison Ivy	3	10
11	25	Poison Ivy	4	10
		SUM	8	22
11	25	Sanicula	3	10
		SUM	3	10
11	8	Sugar Maple	1	10
11	10	Sugar maple	1	20
11	24	Sugar Maple	1	5
		SUM	3	35
11	2	White Ash	1	5

Table 42 (cont'): Herbaceous Community Data, Victoria Hospital Study, London 1986

Location	Plot	Species	No. Plants	% Cover
11	3	White Ash	1	5
11	4	White Ash	1	5
11	7	White Ash	1	5
11	8	White Ash	2	25
11	9	White Ash	2	10
11	10	White Ash	1	5
11	14	White Ash	2	5
11	15	White Ash	1	5
11	21	White Ash	5	40
11	22	White Ash	1	5
		SUM	18	115

Table 42 (cont'): Herbaceous Community Data, Victoria Hospital Study, London 1986

Location	Plot	Species	No. Plants	% Cover
12	3	Aster	1	2
12	9	Aster	14	40
12	10	Aster	2	10
		SUM	17	52
12	16	Basswood	1	2
		SUM	1	2
12	2	Black Cherry	2	2
12	4	Black Cherry	1	1
12	5	Black Cherry	2	1
12	9	Black Cherry	4	5
12	10	Black Cherry	1	1
12	25	Black Cherry	2	1
		SUM	12	11
12	1	Currant	5	20
12	19	Currant	6	5
12	25	Currant	1	5
		SUM	12	30
12	5	Enchanter's Nightshade	4	5
12	9	Enchanter's Nightshade	4	5
12	10	Enchanter's Nightshade	3	5
12	18	Enchanter's Nightshade	1	1
12	25	Enchanter's Nightshade	2	2
		SUM	14	18
12	12	Euonymus	1	2
12	20	Euonymus	1	4
		SUM	2	6
12	3	Garlic Mustard	5	1
12	4	Garlic Mustard	7	2
12	5	Garlic Mustard	5	2
12	8	Garlic Mustard	13	5
12	10	Garlic Mustard	3	1
12	11	Garlic Mustard	5	1
12	18	Garlic Mustard	15	5
12	21	Garlic Mustard	10	5
		SUM	63	22
12	3	Grass	1	5
12	14	Grass	1	5
		SUM	2	10
12	23	Helleborine	1	1
		SUM	1	1
12	10	Hickory	1	5
12	18	Hickory	1	2
		SUM	2	7
12	20	Ironwood	1	5
		SUM	1	5
12	2	Jack-in-the-pulpit	4	5
12	4	Jack-in-the-pulpit	2	2
12	11	Jack-in-the-pulpit	2	1
12	17	Jack-in-the-pulpit	2	5
12	18	Jack-in-the-pulpit	4	5
12	20	Jack-in-the-pulpit	4	2

Table 42 (cont'): Herbaceous Community Data, Victoria Hospital Study, London 1986

Location	Plot	Species	No. Plants	% Cover
12	21	Jack-in-the-pulpit	2	2
12	23	Jack-in-the-pulpit	2	2
12	25	Jack-in-the-pulpit	2	2
		SUM	24	26
12	18	Jewelweed	2	3
		SUM	2	3
12	17	Moonseed	2	5
12	20	Moonseed	1	2
12	22	Moonseed	1	5
		SUM	4	12
12	3	Moss	5	2
12	10	Moss		5
12	11	Moss		1
12	14	Moss	3	15
		SUM	3	23
12	24	Nil	0	
		SUM	0	
12	6	Poison Ivy	3	10
12	7	Poison Ivy	6	10
12	12	Poison Ivy	8	25
12	13	Poison Ivy	1	1
12	15	Poison Ivy	1	2
12	16	Poison Ivy	6	10
12	17	Poison Ivy	10	50
12	19	Poison Ivy	1	1
12	22	Poison Ivy	12	20
12	23	Poison Ivy	8	30
		SUM	56	159
12	2	Sedge		5
		SUM		5
12	17	Solomon's Seal	2	5
		SUM	2	5
12	8	Sugar Maple	1	2
		SUM	1	2
12	1	Thicket Creeper	3	10
12	2	Thicket Creeper	4	10
12	3	Thicket Creeper	4	10
12	12	Thicket Creeper	1	5
		SUM	12	35
12	11	Violet	1	2
12	18	Violet	1	1
		SUM	2	3
12	6	Virginia Waterleaf	1	5
12	11	Virginia Waterleaf	3	10
		SUM	4	15
12	10	White Ash	2	5
12	19	White Ash	1	1
12	20	White Ash	1	1
12	21	White Ash	1	1
		SUM	5	8

Table 43 : Shrub Community Data, Victoria Hospital Study , London 1988

Location	Sub Plot	Species	Diam. (cm)	Cond.	Injury	Cover Length (m)
2	1	Beech	1.37	3	1	0.35
2	1	Beech	1.59	3	3	0.20
2	1	Beech	1.12	5	3	
2	1	Beech	1.61	3	3	0.85
2	1	Beech	1.83	3	3	1.70
2	1	Beech	0.22	3	3	1.25
2	1	Beech	0.22	3	3	0.35
2	1	Beech	0.94	3	3	
2	1	Black Cherry	1.33	3	1	0.25
2	1	Black Cherry	0.33	3	1	
2	1	White Ash	0.44	3	3	
2	2	Black Cherry	1.38	2	3	1.05
2	2	Sugar maple	0.57	3	3	0.50
2	2	Sugar maple	0.92	2	3	0.55
2	2	Sugar maple	0.87	2	3	0.65
2	2	Sugar maple	1	2	3	0.25
2	2	Sugar maple	0.72	4	3	
2	2	Sugar maple	1.16	4	3	0.35
2	2	White Ash	1.55	6	3	0.20
2	3	Beech	1.22	4	5	0.45
2	3	Beech	0.83	5	5	0.25
2	3	Black Cherry	0.98	3	5	0.50
2	3	Black Cherry	0.44	3	3	
2	3	Black Cherry	0.35	3	3	
2	3	Black Cherry	0.87	3	5	
2	3	Black Cherry	0.44	3	5	
2	3	Black Cherry	0.66	3	3	
2	3	Black Cherry	0.77	3	3	
2	3	Black Cherry	1.5	3	3	
2	3	Black Cherry	0.66	3	3	
2	3	Mulberry	0.66	2	1	
2	3	Sugar Maple	1.16	5	3	0.60
2	3	White Ash	0.61	4	5	0.35
2	4	Beech	0.66	6	5	0.10
2	5	Sugar Maple	0.72	4	3	0.35
2	5	Sugar Maple	0.74	4	3	0.55
2	5	Sugar Maple	0.8	4	3	
2	5	Sugar Maple	0.81	4	3	0.40
2	5	Sugar Maple	0.49	4	3	
2	5	Sugar Maple	0.55	4	3	
2	6	Beech	1.3	3	3	0.60
2	6	Black Cherry	1.3	3	3	0.55
2	6	Black Cherry	1.4	6	3	0.45
2	6	Hawthorn	0.3	3	3	0.20
2	6	White Ash	0.6	4	5	0.15

Table 43 (cont'): Shrub Community Data, Victoria Hospital Study, London 1986

Location	Sub Plot	Species	Diam. (cm)	Cond.	Injury	Cover Length (m)
2	6	White Ash	0.5	4	3	0.30
2	6	White Ash	0.7	1	3	
2	6	White Ash	0.5	3	3	0.15
2	6	White Ash	0.3	4	3	0.30
2	6	White Ash	0.8	4	3	0.55
2	6	White Ash	0.6	4	3	0.30
2	6	White Ash	0.5	3	3	
2	6	White Ash	0.5	3	3	
2	7	White Ash	0.6	4	3	0.35
2	7	White Ash	0.3	6	3	0.20
2	7	White Ash	0.6	6	3	
2	7	White Ash	0.9	3	3	0.25
2	7	White Ash	1	2	3	0.30
2	7	White Ash	0.9	2	5	0.60
2	7	White Ash	0.9	2	3	
2	7	White Ash	0.6	4	3	0.20
2	7	White Ash	0.5	5	3	
2	7	White Ash	0.5	5	5	0.35
2	7	Witch Hazel	0.8	4	3	0.50
2	7	Witch Hazel	0.8	4	3	
2	8	Black Cherry	1	3	3	0.25
2	8	Black Cherry	0.8	3	3	0.25
2	8	Black Cherry	0.8	3	3	0.45
2	8	Black Cherry	0.5	3	3	0.15
2	8	Black Cherry	0.8	3	3	
2	8	Black Cherry	0.6	3	3	0.30
2	8	White Ash	0.7	4	3	0.30
2	9	Beech	0.8	4	5	
2	9	Black Cherry	0.7	3	5	0.30
2	9	Black Cherry	0.3	4	3	0.30
2	9	Black Cherry	1.4	2	3	0.85
2	9	Black Cherry	0.8	3	3	0.70
2	9	Black Cherry	0.9	3	3	0.55
2	9	Black Cherry	1	4	3	
2	9	Black Cherry	0.7	4	3	
2	9	Black Cherry	0.7	4	3	
2	9	Black Cherry	0.7	4	3	
2	9	Black Cherry	2.3	2	3	1.00
2	9	Black Cherry	1.4	2	3	
2	9	Black Cherry	0.9	2	3	0.25
2	9	Black Cherry	1.3	3	3	
2	9	Sugar Maple	0.7	3	3	0.25
2	9	Sugar Maple	0.6	4	3	
2	9	Sugar Maple	0.6	2	3	0.45
2	9	White Ash	0.3	4	3	
2	9	White Ash	0.7	4	5	

Table 43 (cont'): Shrub Community Data, Victoria Hospital Study , London 1988

Location	Sub Plot	Species	Diam. (cm)	Cond.	Injury	Cover Length (m)
2	10	Sugar Maple	0.44	2	3	0.30
2	10	Sugar Maple	0.6	3	3	0.35
2	10	Sugar Maple	0.55	3	3	
2	10	Sugar Maple	0.59	3	1	0.25
2	10	Sugar Maple	0.7	4	3	0.35
2	10	Sugar Maple	0.6	4	3	
2	10	Sugar Maple	0.5	3	3	0.40
2	10	Sugar Maple	0.4	4	3	
2	10	Sugar Maple	0.4	4	3	0.55
2	10	Sugar Maple	0.4	5	3	
2	10	Sugar Maple	0.6	3	3	
2	10	Sugar Maple	0.8	4	3	0.55
2	11	White Ash	0.4	3	3	
2	11	White Ash	1.3	4	3	
2	11	White Ash	0.5	3	3	0.50
2	11	White Ash	1.1	4	3	
2	12	Lg.-toothed Aspen	1.2	5	3	0.30
2	12	Sugar Maple	1.1	2	3	0.20
2	12	Sugar Maple	1	3	3	0.40
2	12	White Ash	0.7	6	5	
2	12	White Ash	0.7	5	3	0.25
2	12	White Ash	0.4	4	3	0.35
2	12	White Ash	0.5	4	3	
2	12	White Ash	0.6	4	3	
2	12	White Ash	1.1	3	5	0.50
2	12	White Ash	0.5	5	3	0.10
2	12	White Ash	0.5	4	3	
2	12	White Ash	0.7	7	7	
2	13	Black Cherry	1.3	2	3	0.40
2	13	Buckthorn	0.5	4	3	
2	13	Buckthorn	0.6	5	5	
2	13	Buckthorn	0.7	4	5	0.25
2	13	White Ash	0.5	4	3	0.40
2	13	White Ash	0.5	6	3	
2	14	White Ash	0.6	3	1	0.50
2	14	White Ash	0.9	5	5	
2	15	Sugar Maple	0.4	4	3	0.35
2	15	Sugar Maple	0.6	4	3	0.40
2	15	Sugar Maple	0.4	3	3	
2	15	Sugar Maple	0.8	2	3	0.50
2	16	Black Cherry	0.9	3	3	0.45
2	16	Black Cherry	0.8	4	3	
2	16	Black Cherry	1.2	4	3	0.40
2	16	Black Cherry	1	3	3	

Table 43 (cont'): Shrub Community Data, Victoria Hospital Study , London 1986

Location	Sub Plot	Species	Diam. (cm)	Cond.	Injury	Cover Length (m)
2	16	Black Cherry	0.9	3	3	
2	16	Black Cherry	0.9	3	3	0.25
2	16	Black Cherry	0.6	3	3	0.60
2	16	Black Cherry	0.6	3	3	0.55
2	16	Black Cherry	2.3	3	3	
2	16	Black Cherry	1.3	3	3	0.90
2	16	Black Cherry	1.1	3	3	0.20
2	16	Black Cherry	0.8	3	3	0.25
2	16	Black Cherry	0.9	3	3	0.30
2	16	Black Cherry	0.5	3	3	
2	16	Sugar maple	0.7	5	3	
2	16	Sugar maple	1	3	3	
2	16	White Ash	0.9	3	3	0.70
2	16	White Ash	2.2	3	3	0.40
2	17	Buckthorn	0.5	3	3	
2	17	Nannyberry	1.2	4	3	0.60
2	17	White Ash	0.8	5	3	0.30
2	17	White Ash	0.3	5	5	0.30
2	17	White Ash	0.8	5	3	0.50
2	18	Sugar Maple	0.9	2	3	0.90
2	18	White Ash	0.4	3	3	
2	18	White Ash	0.6	5	3	
2	18	White Ash	0.5	4	3	0.20
2	18	White Ash	0.5	3	3	0.45
2	18	White Ash	0.4	5	3	0.25
2	18	White Ash	0.3	4	3	0.20
2	18	White Ash	0.5	7	5	0.10
2	18	White Ash	0.7	5	3	0.20
2	18	White Ash	0.5	4	3	
2	18	White Ash	0.5	5	3	0.15
2	18	White Ash	0.4	6	3	0.25
2	19	Sugar Maple	4.9	2	3	0.40
2	19	Sugar Maple	0.5	2	3	
2	19	Sugar Maple	0.7	2	3	
2	20	Sugar Maple	1	2	3	0.10
2	20	Sugar Maple	0.7	3	3	0.50
2	20	Sugar Maple	0.7	3	3	0.45
2	20	Sugar Maple	1	3	3	0.25
2	20	Sugar Maple	0.6	3	3	0.20
2	20	Sugar Maple	0.6	3	3	
2	20	Sugar Maple	1	3	3	0.55
2	20	Sugar Maple	0.6	3	3	0.25
2	20	Sugar Maple	0.6	3	3	0.65
2	20	Sugar Maple	0.7	3	3	0.55
2	20	Sugar Maple	0.5	2	3	

Table 43 (cont'): Shrub Community Data, Victoria Hospital Study , London 1986

Location	Sub Plot	Species	Diam. (cm)	Cond.	Injury	Cover Length (m)
2	21	White Ash	0.5	1	3	
2	21	White Ash	0.5	3	5	
2	22	Black Cherry	0.4	2	3	0.20
2	22	Black Cherry	1.1	2	3	0.70
2	22	Black Cherry	0.6	2	3	
2	22	Black Cherry	0.4	2	3	
2	22	Buckthorn	0.5	2	3	
2	22	Buckthorn	0.5	2	3	0.30
2	22	Sugar Maple	0.7	3	3	1.00
2	22	Sugar Maple	0.4	4	3	0.45
2	22	Sugar Maple	1.1	1	3	0.30
2	22	White Ash	0.4	3	7	0.30
2	22	White Ash	0.4	3	1	
2	22	White Ash	0.4	4	3	0.20
2	23	White Ash	0.5	4	2	0.40
2	24	Lg.toothed aspen	0.5	5	3	
2	24	Lg.toothed aspen	0.5	5	5	
2	25	Sugar Maple	0.7	2	3	0.55

Table 43 (cont'): Shrub Community Data, Victoria Hospital Study, London 1986

Location	Sub Plot	Species	Diam. (cm)	Cond.	Injury	Cover Length (m)
3	1	Cranberry	2	2	3	0.90
3	1	Cranberry	0.7	3	3	
3	1	Cranberry	0.8	3	3	
3	1	Cranberry	0.8	5	3	
3	1	White Ash	0.8	5	3	
3	2	Sugar Maple	1.1	3	3	0.55
3	2	Sugar Maple	0.8	4	3	0.45
3	3	Black Cherry	0.5	3	2	0.15
3	3	Black Cherry	0.5	3	2	0.25
3	3	Black Cherry	0.5	3	2	
3	3	Black Cherry	0.8	3	2	0.10
3	3	Black Cherry	0.4	5	2	0.30
3	3	Black Cherry	0.4	5	2	
3	3	Black Cherry	0.5	5	2	
3	4	Nil				
3	5	Nil				
3	6	Black Cherry	0.4	3	3	0.25
3	6	Black Cherry	0.45	3	3	0.60
3	6	Black Cherry	0.5	4	3	
3	6	Black Cherry	0.3	3	3	
3	6	Black Cherry	0.5	4	3	
3	6	White Ash	2.3	3	3	
3	6	White Ash	1	5	3	0.85
3	7	Black Cherry	0.8	3	3	
3	7	Black Cherry	0.6	3	3	
3	7	Black Cherry	0.7	3	3	
3	7	Black Cherry	0.5	3	3	0.30
3	7	Black Cherry	0.4	3	3	0.20
3	7	Black Cherry	0.5	3	3	0.40
3	7	Black Cherry	0.5	3	3	0.10
3	7	Black Cherry	0.4	3	3	0.15
3	7	Black Cherry	0.8	3	3	
3	7	Black Cherry	0.9	3	3	
3	7	White Ash	0.6	3	3	
3	7	White Ash	0.4	3	3	0.50
3	7	White Ash	0.5	3	3	0.45
3	8	Black Cherry	1.9	3	3	
3	8	Black Cherry	1.8	3	3	0.50
3	8	Black Cherry	0.8	3	3	0.30
3	8	Black Cherry	0.5	3	3	0.15
3	8	Black Cherry	0.5	3	3	0.10
3	8	Black Cherry	0.6	3	3	0.55
3	8	Black Cherry	0.4	3	3	

Table 43 (cont'): Shrub Community Data, Victoria Hospital Study, London 1986

Location	Sub Plot	Species	Diam. (cm)	Cond.	Injury	Cover Length (m)
3	8	Black Cherry	0.6	3	3	0.35
3	9	Nil				
3	10	Black Cherry	0.7	3	3	
3	10	Sugar Maple	3.3	2	3	
3	11	Buckthorn	0.4	2	3	
3	11	Honeysuckle	0.3	2	3	0.35
3	11	Honeysuckle	0.4	4	3	
3	11	Honeysuckle	0.4	3	3	
3	11	Honeysuckle	0.3	3	3	0.20
3	11	Honeysuckle	0.5	2	3	0.55
3	11	Honeysuckle	0.5	3	3	0.50
3	12	Black Cherry	1	2	3	0.40
3	12	Black Cherry	1	3	3	0.60
3	12	Black Cherry	0.6	3	3	
3	12	Black Cherry	0.7	6	3	
3	12	Black Cherry	0.4	6	3	
3	12	Black Cherry	0.4	4	3	
3	12	Black Cherry	1.9	2	3	
3	12	Black Cherry	0.8	3	3	0.35
3	12	Black Cherry	0.8	3	3	0.10
3	12	Black Cherry	2	2	3	1.15
3	12	Black Cherry	0.8	3	3	0.45
3	12	Black Cherry	1	3	3	0.50
3	12	Black Cherry	0.8	3	3	
3	12	Black Cherry	0.9	3	3	
3	12	Black Cherry	0.5	3	3	0.20
3	12	White Ash	1.3	3	3	0.64
3	12	White Ash	1.4	4	3	0.30
3	13	Black Cherry	0.9	3	3	
3	13	Black Cherry	0.3	2	3	
3	13	Black Cherry	1.8	3	3	1.55
3	13	Black Cherry	0.5	3	3	0.20
3	13	White Ash	1	4	3	0.60
3	13	White Ash	0.3	3	3	
3	13	White Ash	0.9	4	3	
3	14	Black Cherry	0.9	3	3	0.50
3	14	Black Cherry	0.5	3	3	
3	14	Black Cherry	3.1	2	3	0.55
3	14	Black Cherry	0.8	3	3	
3	14	Black Cherry	1.7	5	3	0.35
3	14	Black Cherry	0.8	3	3	
3	14	Black Cherry	0.7	4	3	
3	14	Black Cherry	1	4	3	0.35
3	14	Black Cherry	0.9	3	3	0.45

Table 43 (cont'): Shrub Community Data, Victoria Hospital Study , London 1988

Location	Sub Plot	Species	Diam. (cm)	Cond.	Injury	Cover Length (m)
3	14	Sugar Maple	1.7	2	3	0.65
3	14	White Ash	2.8	3	3	1.25
3	14	White Ash	0.5	3	3	0.45
3	14	White Ash	3	3	3	
3	14	White Ash	0.3	4	7	0.20
3	15	Black Cherry	0.4	5	3	
3	15	Buckthorn	0.9	3	3	0.40
3	16	Shin. Buckthorn	4	2	3	1.30
3	16	Shin. Buckthorn	2.5	2	3	0.20
3	16	Shin. Buckthorn	1.2	2	3	0.60
3	16	Shin. Buckthorn	1.3	2	3	0.65
3	16	Shin. Buckthorn	0.8	2	3	
3	16	White Ash	1.5	3	3	0.50
3	16	White Ash	3.9	2	3	1.20
3	17	Black Cherry	1.9	3	3	1.10
3	17	Black Cherry	0.9	3	3	0.50
3	17	Black Cherry	1.2	2	3	0.35
3	18	White Ash	1.8	4	3	
3	18	White Ash	1.8	9	3	
3	19	Nil				
3	20	Black Cherry	0.6	4	3	0.30
3	20	Black Cherry	0.4	4	3	0.30
3	20	Black Cherry	0.8	4	3	0.20
3	20	Black Cherry	0.6	5	3	
3	20	Black Cherry	1.9	2	3	0.65
3	20	Black Cherry	2.2	2	3	0.20
3	21	Black Cherry	0.9	2	3	0.35
3	22	White Ash	1.7	3	3	0.80
3	22	White Ash	2.5	6	3	0.20
3	23	Nil				
3	24	Nil				
3	25	Black Cherry	0.8	3	3	0.40
3	25	Black Cherry	0.4	3	3	

Table 44 : Victoria Hospital Tree Summary - Raw Data

Plot Number	Species	Number Trees	Cover Length	Total Area	Mean Dominance	Mean Diam	Mean Injury
2	Beech	14	80.8	2632.9	2.5	13.7	2.9
2	Black Cherry	1	1.5	257.4	2.0	18.1	4.0
2	Hawthorn	9	32.1	481.6	3.0	8.0	4.2
2	Ironwood	10	27.0	521.7	3.0	8.0	3.0
2	L.T. Aspen	2	12.4	2465.8	1.0	39.4	5.0
2	Red Oak	2	33.4	4257.8	1.5	49.3	3.0
2	S.B. Hickory	13	46.1	4206.0	2.2	18.7	2.5
2	Sugar Maple	14	88.5	4088.2	2.3	16.7	2.6
2	White Ash	19	73.3	11423.8	1.8	25.8	5.4
2	White Oak	1	9.6	1058.3	1.0	36.7	3.0
3	Basswood	2	9.3	199.4	3.0	10.8	3.5
3	Beech	11	94.0	4021.0	2.5	15.8	3.4
3	Black Cherry	2	8.3	1395.6	2.2	17.4	3.1
3	Hackberry	3	1.2	127.9	2.2	17.4	3.1
3	Ironwood	7	33.5	933.5	2.2	17.5	3.1
3	Sugar Maple	16	144.8	8727.5	2.0	24.6	2.3
3	White Ash	42	3.2	277.4	2.0	16.9	3.0
6	Basswood	2	8.6	937.5	2.0	24.4	2.5
6	Ironwood	10	29.2	971.3	2.6	10.1	2.4
6	Red Oak	23	220.0	15510.7	2.1	23.4	3.0
6	Shag. Hickory	7	21.5	335.0	2.7	7.7	2.7
6	Sugar Maple	15	110.5	5298.8	2.3	18.0	2.5
6	White Ash	15	39.4	2405.3	2.5	11.7	3.1

Table 44 (cont'): Victoria Hospital Tree Summary - Raw Data

Plot Number	Species	Number Trees	Cover Length	Total Area	Mean Dominance	Mean Diam	Mean Injury
7	Amer. Elm	1	0.0	80.2	3.0	10.1	3.0
7	Beech	6	18.5	1077.7	2.5	14.6	3.0
7	Hawthorn	2	4.9	157.9	3.0	9.8	4.5
7	Ironwood	6	15.0	3026.9	3.0	16.1	3.3
7	Red Maple	3	11.5	915.0	1.7	17.8	2.3
7	Red Oak	17	101.6	14530.1	2.5	17.0	3.4
7	Shag. Hickory	5	12.1	104.4	1.9	29.9	3.4
7	Sugar Maple	17	122.3	10568.9	2.1	25.2	3.0
7	White Ash	4	23.7	785.5	2.8	13.0	3.5
7	White Oak	6	43.3	982.4	2.0	25.0	3.0
11	Basswood	2	10.7	2561.6	1.0	40.1	3.5
11	Beech	14	62.5	4438.3	2.2	17.7	2.3
11	Black Cherry	12	27.4	1326.7	2.1	11.2	3.0
11	Black Walnut	1	4.4	149.6	2.0	13.8	4.0
11	Hawthorn	1	0.0	49.0	3.0	7.9	7.0
11	Ironwood	10	28.3	1528.0	2.3	13.4	4.6
11	Red Maple	2	12.3	1027.6	2.3	25.6	3.3
11	Shining Buckthorn	1	4.5	35.3	3.0	6.7	6.0
11	Sugar Maple	28	123.3	7392.6	2.2	15.2	2.8
11	White Ash	18	58.9	4214.3	2.0	12.7	3.5
12	Amer. Elm	1	3.8	37.4	3.0	6.9	4.0
12	Basswood	20	58.3	4278.9	2.4	15.0	3.6
12	Beech	4	41.2	1810.4	2.0	22.8	3.3
12	Hackberry	1	3.7	55.4	3.0	8.4	4.0
12	Ironwood	11	49.1	718.8	2.8	8.7	3.2
12	Silver Maple	1	9.5	3422.6	1.0	66.0	3.0
12	Sugar Maple	12	62.4	6190.0	2.3	18.9	3.1
12	Swamp W. Oak	6	37.5	3192.4	2.0	23.9	3.8

Table 44 (cont'): Victoria Hospital Tree Sumary : Plot Summaries

Plot Number	Number Species	No. Trees	Mean Diam	Total Area	Mean Crown	Mean Dominance	Cover Length
2	10	85	18.1	3.139	3.6	2.0	404.7
3	7	83	17.4	1.568	3.1	2.3	294.3
6	7	73	16.3	2.546	2.7	2.4	432.9
7	10	67	19.7	3.223	3.2	2.4	352.9
11	10	89	14.9	2.272	4.0	2.2	332.3
12	11	89	16.8	3.007	3.4	2.3	472.0

Table 45: Victoria Hospital Permanent Plot Soil Profile Analysis

Plot	Horizon	Colour	Texture	Structure	Horizon Boundary	Stoniness	Roots
Control	Ah	Black, 10YR 2/1	Silty clay	Sub-angular, blocky, fine	Wavy, clear	Slightly stony	Abundant, large and medium
	B	Green/brown, 2.5 Y 4/2	Silty clay	Sub-angular, blocky, fine	Wavy, clear	Rounded medlun size	Abundant, medium
	Cg	Matrix, 2.5Y 4/2	Clay	Angular, blocky, medium		Slightly stony	Few, medium
		Mottle, 2.5 Y 4/4					
	Cg2	Matrix, 10YR 5/2	Clay	Angular, blocky, medium		Slightly stony	Few, medium
		Mottle, 10YR 5/4					
2	Ah	Dark grey, 10YR 4/1	Loam	Loose, Sub-angular, blocky, fine	Wavy, clear	Moderately stony	Few, large plentiful, medium
	Bm	Brown, 10YR 5/3	Silt	Sub-angular, blocky, fine	Smooth, clear	Moderately stony	Plentiful, medium
	C1	Dark yellow, 10YR 4/4	Clay	Angular, blocky, medium		Slightly stony	Few, medium
	C2	10YR 4/4	Clay	Angular, blocky, medium		Slightly stony	Few, medium
3	Ah	10YR 2/2	Silt loam	Fine, sub-angular blocklike	Wavy, clear	Slightly stony	Common, medium
	Bm	Brown, 10YR 5/3	Silty clay	Angular, blocklike, medium	Wavy, clear	Slightly stony	Common, medium
	C1	Dark yellowish brown, 10YR 4/4	Clay	Angular, blocklike, medium-coarse		Slightly stony	Few, medium
	C2	Reddish brown, 10YR 5/4	Clay	Angular, blocklike, medium-coarse			Few, medium
6	Ah	Very dark greyish brown, 10YR 3/2	Loan	Sub-angular, blocklike, fine	Wavy, clear	Non-stony	Plentiful, medium some fine
	Bm	Yellowish brown, 10YR 5/4	Silty clay	Angular, blocklike, fine	Smooth, clear	Non-stony	Some medium
	C1	Dark brown, 10YR 4/3	Silty clay	Angular, blocklike, fine		Non-stony	Some medium
	C2	Dark yellowish brown, 10 R 4/4	Silty clay	Angular			
7	Ah	Dark greyish brown, 10YR 3/2	Silt loam	Sub-angular, blocklike, fine	Wavy, clear	Moderate to slightly stony	Common, medium to large
	Bm	Brown, 10YR 5/3	Silty clay	Angular, blocklike, fine	Smooth, clear	Slightly stony	Common, medium
	C1	Dark yellowish brown, 10YR 4/4	Clay	Angular, blocklike, medium-coarse		Slightly stony	Few, medium
	C2	Dark brown, 10YR 4/3	Clay	Angular, blocklike, medium coarse		Slightly stony	Few, medium
11	Ah	Very dark brown, 10YR 2/2	Loam	Sub-angular, blocklike, very fine	Wavy, clear	Slightly stony	Common, fine to few medium
	Bm	Yellowish brown, 10YR 5/4	Silt	Sub-angular, blocklike, fine	Wavy, gradual	Slightly stony	Common fine to few medium
	C1	Dark yellowish brown, 10YR 5/4	Clay	Angular, blocky, medium		Slightly stony	Few medium
	C2	Dark yellowish brown, 10YR 3/4	Clay	Angular, blocky, medium			Few

Table 46 : Victoria Hospital Permanent Plot Soil Profile Chemistry

Plot	Control				2				3			
Horizon	Ah	B	Cg	Cg2	Ah	Bm	C1	C2	Ah	Bm	C1	C2
Depth (cm)	0 to 20	20 to 35	35 to 60	60 to 65	0 to 10	10 to 30	30 to 50	50 to 55	0-15	15 to 30	30 to 55	55 to 60
Chemical Parameters												
pH (water)	6.65	7.05	7.3	7.2	5.85	4.8	4.8	5.8	6.5	6.05	5.35	5.4
pH (CaCl2)	6.25	6.4	6.65	6.75	5.35	4.1	4.1	5.4	6	5.35	4.4	4.65
% Sand	18.5	18.5	18.5	22.5	44.5	33.5	30.5	20.5	25	27	16.5	25
% Silt	55.5	55.5	54.5	52	39	39	37	34.5	55	56.5	42.5	41.5
% Clay	26	25.5	27	25.5	16.5	28	32.5	45	20	17	41	44.5
% Organic Matter	6.3	1.45	0.675	0.705	4.05	0.715	0.715	0.59	4.55	1.15	0.595	0.53
% Total Inorganic Carbon	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrogen (mg/g)	5.7	1.4	0.7	0.65	2.5	0.55	0.65	0.625	2.8	0.7	0.48	2.8
Ca (NaCl) (milliequiv./100g)	26.94	13.67	11.85	9.7	10.89	3.72	5.32	14.07	16.89	4.74	6.51	10.07
Mg (NaCl) "	3.89	2.16	1.97	1.82	1.38	0.66	0.72	1.15	2.59	0.84	1.845	2.32
K (NaCl) "	0.275	0.185	1.95	0.17	0.17	0.125	0.155	0.23	0.21	0.15	0.21	0.31
Al (NaCl) "	0.08	0.08	0.055	0.035	0.08	2.21	2.47	0.15	0.13	0.1	1.35	0.65
CEC "	31.19	16.09	14.07	11.7	12.51	6.7	8.79	7.79	19.81	5.83	9.91	13.34
Al (CaCl2) (ug/g)	<0.20	0.2	0.45	0.95	0.8	5	4.65	0.7	0.7	0.95	1.9	1.1
Fe (Pyrophosphate extract) (% dry wt)	0.155	0.1	0.075	0.09	0.24	0.205	0.205	0.13	0.195	0.235	0.165	0.125
Al (Pyrophosphate extract) (")	0.175	0.135	0.075	0.06	0.135	0.125	0.125	0.065	0.095	0.15	0.13	0.1
Fe (Dithionite extract) (% dry wt)	0.58	0.71	1.05	1.065	0.86	1.05	1.37	1.765	0.845	0.9	1.38	1.44
Al (Dithionite extract) (")	0.14	0.14	0.17	0.14	0.175	0.175	0.23	0.255	0.16	0.182	0.245	0.225
Sulphate (water) (ug/g)	48.5	45.1	60	83	46	42.5	50.5	65.5	39	34	43	60.5
Cu (total)(ug/g)	28	15.5	16.5	19	11.5	14.5	22.5	34	9.6	2.7	20.5	23.5
Ni (total) (")	19	19.1	24	25.5	18.5	25	31	38	10	10.5	30.5	28
Pb (total)(")	28.5	11.5	15.5	17.5	29.5	13.5	16.5	16.5	35.5	9.4	50	13.5
Zn (total)(")	72.5	59.5	67.5	70	92	76.5	84.5	98	81	70	82	82

Table 46 (cont'): Victoria Hospital Permanent Plot Soil Profile Chemistry

Plot	6				7				11			
Horizon	Ah	B	C1	C2	Ah	Bm	C1	C2	Ah	Bm	C1	C2
Depth (cm)	0 to 15	15 to 35	35 to 60	60 to 65	0 to10	10 to 30	30 to 55	55 to 60	0 to 20	20 to 40	40 to 55	55 to 60
Chemical Parameters												
pH (water)	6	6	6.25	7.3	5.9	5.6	6.05	7.2	6.5	5.85	5.45	7.15
pH (CaCl2)	5.4	5.25	5.4	6.7	5.35	4.85	5.35	6.7	6.2	5.1	4.8	6.65
% Sand	17	15	11	22	21	21.5	9	11	35.5	30.5	17.5	16
% Silt	52	61	39	36	54	46.5	33.5	41.5	42.5	49	42.5	37
% Clay	31	24	50.5	42	25	32	58	47.5	21.5	20.5	40.5	46.5
% Organic Matter	5.1	1.11	0.65	0.735	4.1	1.15	0.8	0.7	6.65	0.975	0.74	0.73
% Total Inorganic Carbon	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrogen (mg/g)	3.01	0.95	0.65	0.75	2.68	1.74	0.85	0.85	3.68	0.58	0.63	0.63
Ca (NaCl) (milliequiv./100g)	17.88	7.05	15.13	19.24	13.87	7.39	16.6	23.09	20.07	5.3	11.68	19.04
Mg (NaCl) "	2.64	1.13	3.4	3.06	2.03	1.285	2.475	2.01	1.97	0.705	1.66	2.57
K (NaCl) "	0.31	0.105	0.235	0.25	0.33	0.175	0.3	0.32	0.285	0.13	0.23	0.23
Al (NaCl) "	0.11	0.17	0.165	0.225	0.06	0.275	0.09	0.085	0.145	0.19	0.395	0.02
CEC "	20.93	8.45	18.9	23.07	16.29	9.12	19.48	25.5	22.46	6.325	13.95	21.85
Al (CaCl2) (ug/g)	1.1	1.2	0.8	0.85	0.8	0.85	0.7	0.95	0.7	0.95	1.4	1.25
Fe (Pyrophosphate extract) (% dry wt)	0.38	0.4	0.14	0.09	0.295	0.23	0.165	0.085	0.3	0.29	0.22	0.12
Al (Pyrophosphate extract) (")	0.18	0.22	0.105	0.045	0.135	0.12	0.08	0.035	0.14	0.185	0.13	0.06
Fe (Dithionite extract) (% dry wt)	0.94	0.965	1.79	1.58	0.92	1.12	1.74	1.74	1.01	1.01	1.41	1.67
Al (Dithionite extract) (")	0.21	0.235	0.36	0.285	0.195	0.185	0.28	0.265	0.19	0.2	0.23	0.255
Sulphate (water) (ug/g)	11	22.5	33	76.5	36.5	50.5	63	67	34.5	34.5	51	72.5
Cu (total)(ug/g)	11	10.5	30	27.5	11	13	24.5	31.5	10.5	9.05	19.5	27
Ni (total) (")	15	17	40	35.5	15.5	20.5	37	44.5	11.5	16.5	26	36.5
Pb (total)(")	27	11	15	14	23.5	13.5	15.5	16.5	23.5	10.5	12.5	14
Zn (total)(")	74	62.5	86.5	80.5	82.5	73	90	94.5	92	68	80	91.5

Table 47: Dioxin Concentrations■ in Surface Soils (0-5cm) Collected from Permanent Plots in the Vicinity of Victoria Hospital

Site Number	Land Use	T4CDD Conc. ppt	T4CDD # Iso	T4CDD D.L.	T4CDD % Recov	P5CCD Conc. ppt	P5CCD # Iso	P5CCD D.L.	H6CDD Conc. ppt	H6CDD # Iso	H6CDD D.L.	H7CDD Conc. ppt	H7CDD # Iso	H7CDD D.L.
2	Urban Park	ND		10	70	ND		20	ND		30	ND		20
3	Urban Park	ND		4	94	ND		9	ND		30	ND		20
6	Urban Park	ND		1	98	ND		1	ND		3	7	2	
7	Urban Park	ND		1	72	ND		40	ND		30	ND		2
11	Rural Park	ND		1	81	ND		200	ND		20	ND		1

Site Number	Land Use	O8CDD Conc. ppt	O8CDD # Iso	O8CDD D.L.	O8CDD % Recov	T4CDF Conc. ppt	T4CDF # Iso	T4CDF D.L.	P5CDF Conc. ppt	P5CDF # Iso	P5CDF D.L.	H6CDF Conc. ppt	H6CDF # Iso	H6CDF D.L.
2	Urban Park	ND		60	110	ND		20	ND		10	ND		10
3	Urban Park	ND		30	83	ND		6	ND		6	ND		7
6	Urban Park	42			95	ND		2	ND		1	ND		2
7	Urban Park	210			100	42	4		ND		10	ND		1
11	Rural Park	78			120	120	3		ND		30	11	2	

Site Number	Land Use	H7CDF Conc. ppt	H7CDF # Iso	H7CDF D.L.	O8CDF Conc. ppt	O8CDF # Iso	O8CDF D.L
2	Urban Park	ND		20	ND		40
3	Urban Park	ND		10	ND		20
6	Urban Park	ND		2	ND		2
7	Urban Park	ND		2	ND		
11	Rural Park	ND		1	ND		8

# Iso = Number of isomers detected
D.L = Detection limit for sample
% Recov = Percent of standard revovered
■ = parts per million, single sample

FIGURES

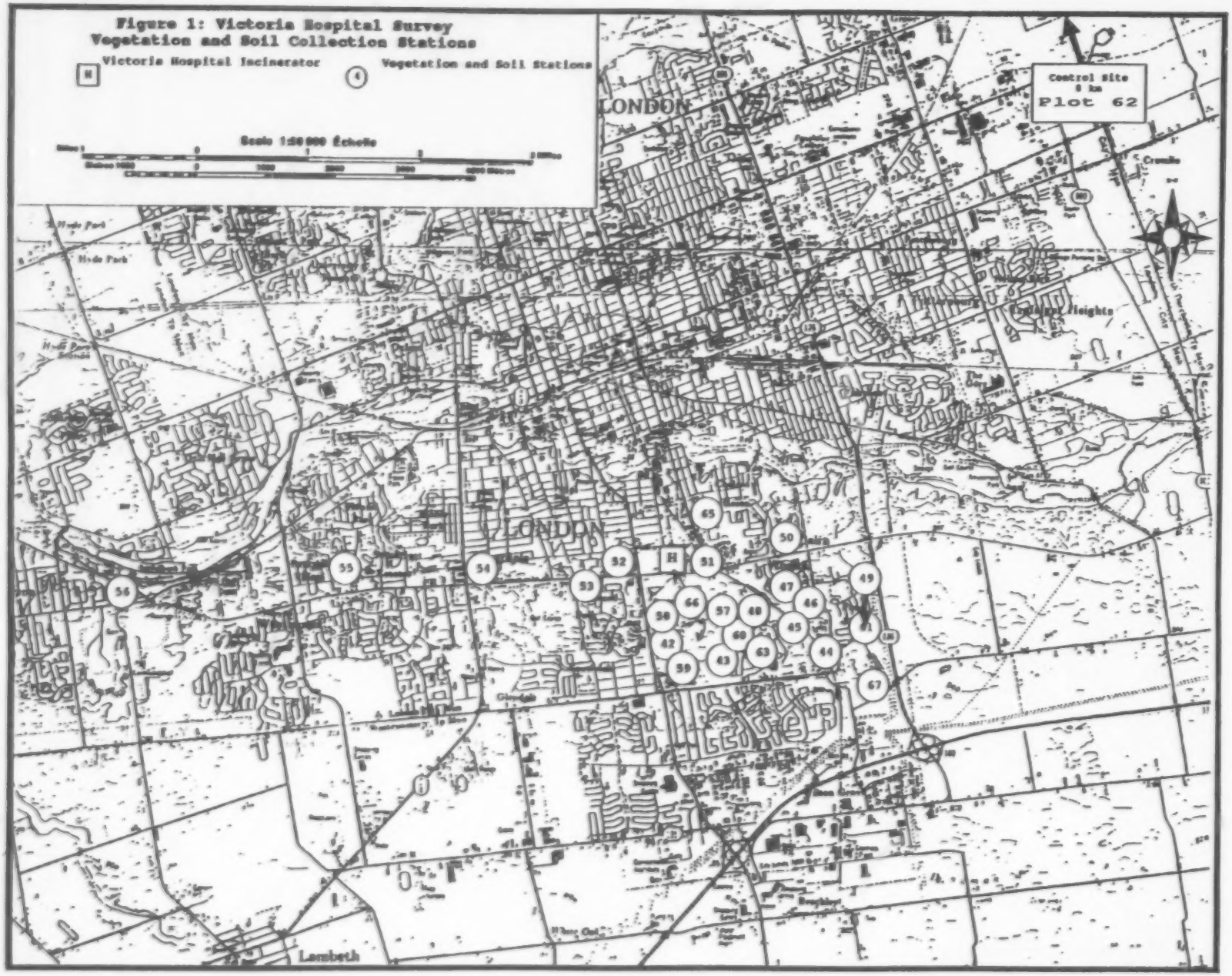
Figure 1: Victoria Hospital Survey
Vegetation and Soil Collection Stations
Victoria Hospital Incinerator
Vegetation and Soil Stations
Scale 1:50 000 Échelle
Control Site
1 km
Plot 62
LONDON
LONDON
Lambeth
Hyde Park
Crumlin
Parkhurst Heights
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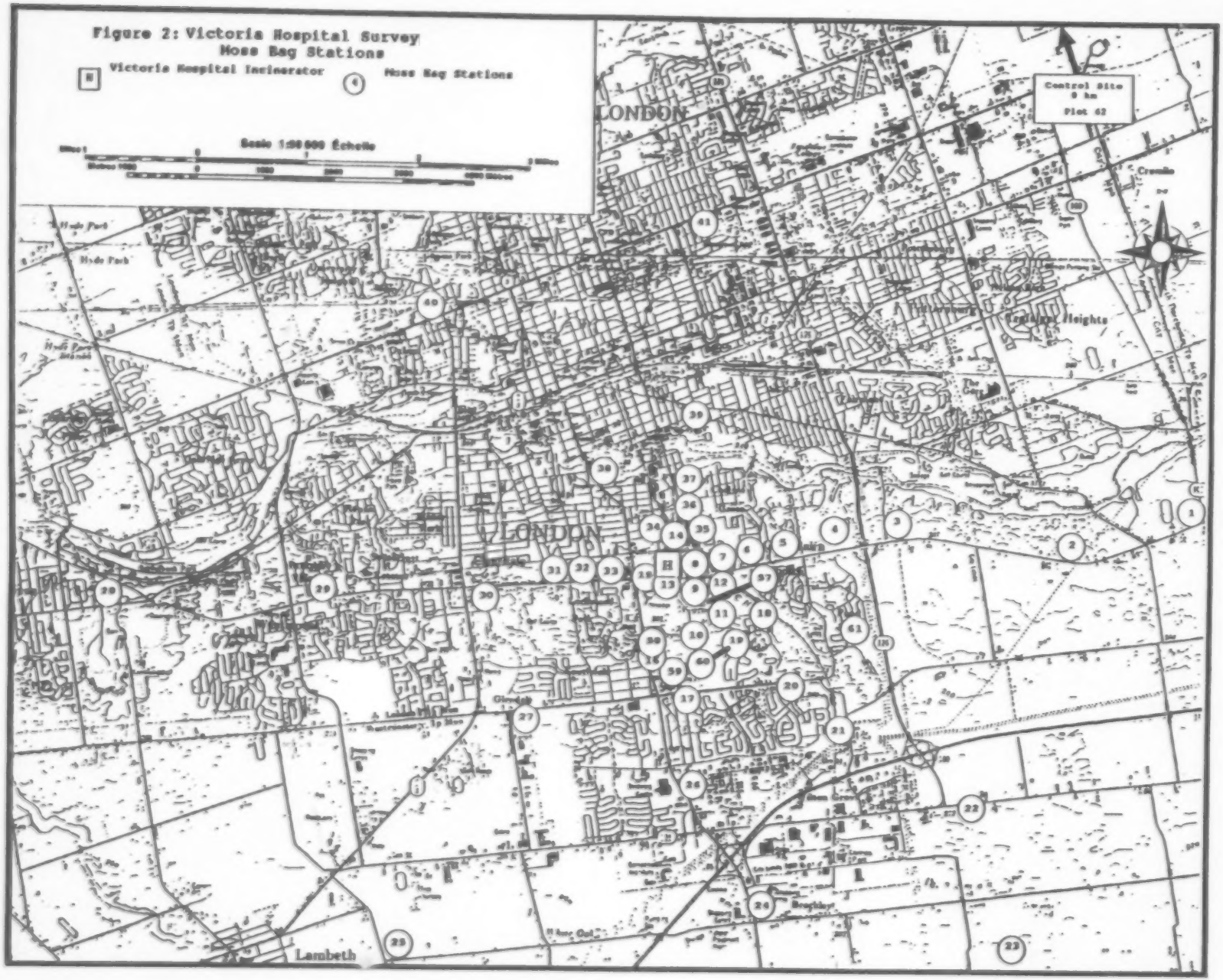
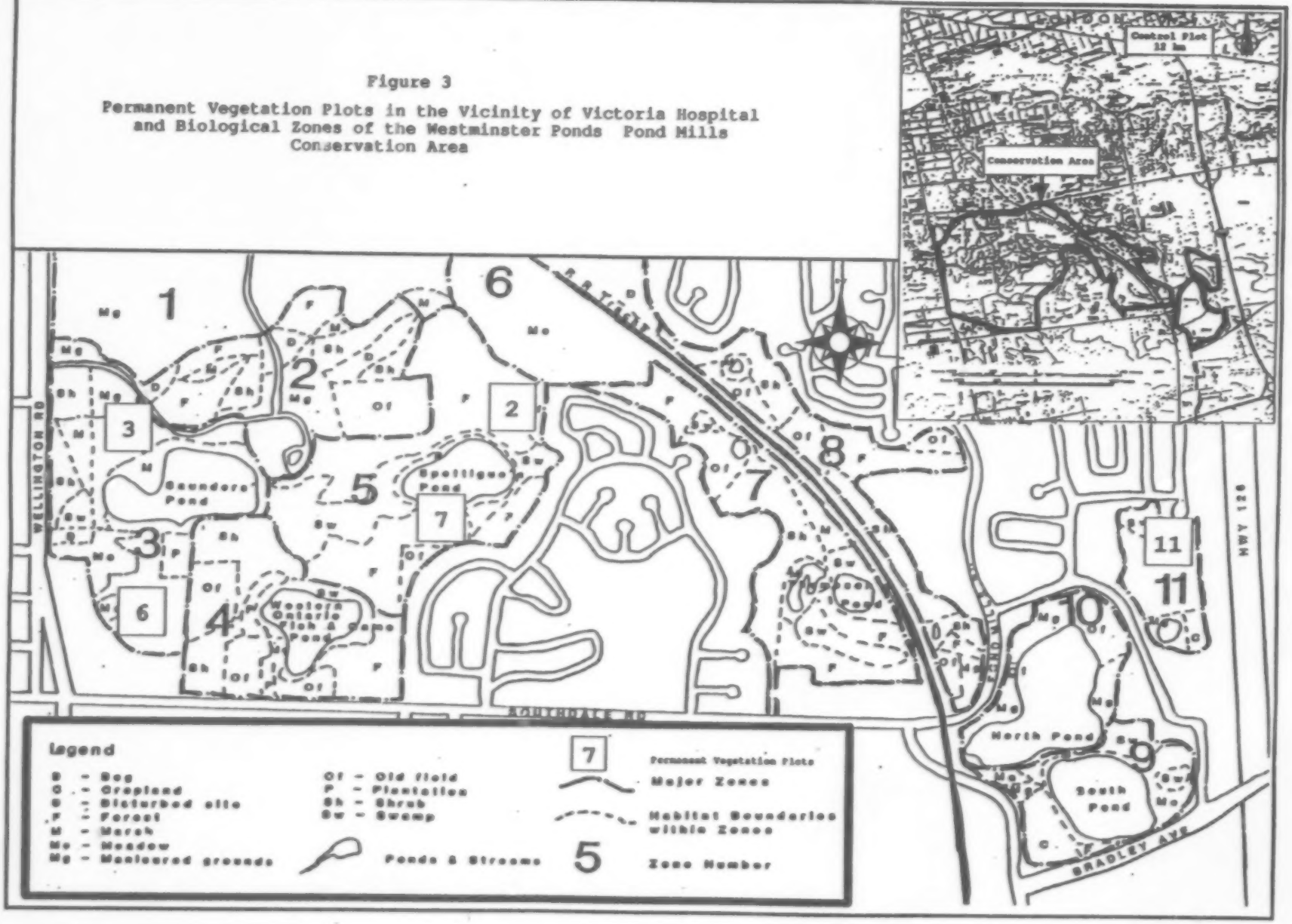


Figure 2: Victoria Hospital Survey
Hose Bag Stations
Victoria Hospital Incinerator
Hose Bag Stations
Scale 1:50 000 Échelle
LONDON
Control Site
9 km
Plot 42
Hyde Park
Lambeth

Figure 3

Permanent Vegetation Plots in the Vicinity of Victoria Hospital and Biological Zones of the Westminster Ponds Pond Mills Conservation Area



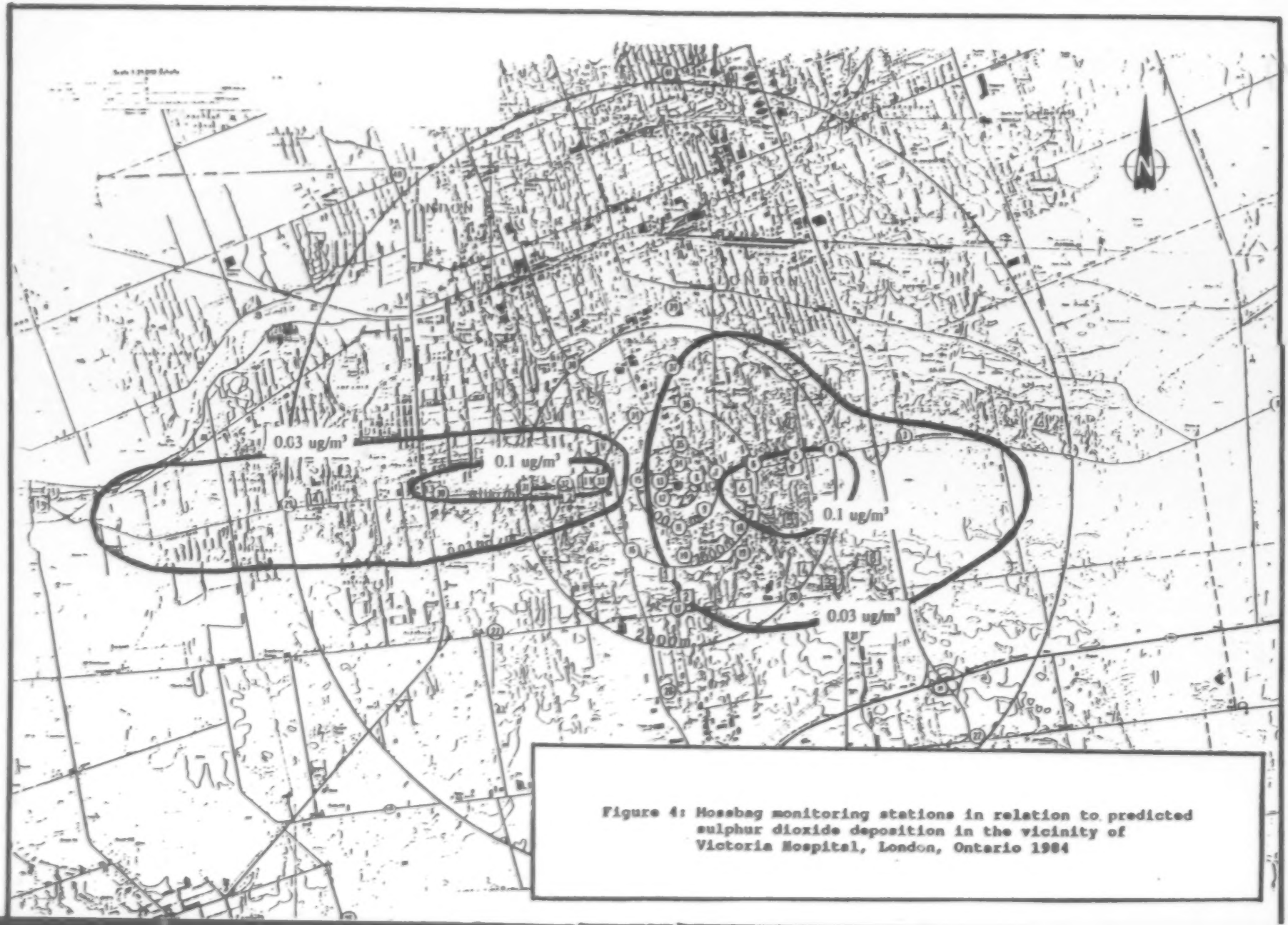


Figure 4: Hossbag monitoring stations in relation to predicted sulphur dioxide deposition in the vicinity of Victoria Hospital, London, Ontario 1984